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CAUSES OF REJECTION AND THE INCIDENCE OF DEFECTS

AMONG 18 AND 19 YEAR OLD SELECTIVE SERVICE REGISTRANTS

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Data on rates of rejection, causes of rejection and the incidence of physical and mental defects among 18 and 19 year old registrants are being presented here in response to numerous requests for information on the physical status of this age group. The information has been taken from a sample of 45,585 reports of physical examination and induction, D. S. S. Form 221, received at National Headquarters of the Selective Service System. They represent physical examinations of 42,273 white and 3,312 Negro registrants made at local boards and induction stations during December 1942 and January and February 1943.[1]

Registrants born on or after Jan. 1, 1922 and on or before June 30, 1924 were required to register at Selective Service local boards on June 30, 1942 in the fifth registration but they did not become liable for training and service until the Selective Training and Service Act of 1940 was amended, effective Nov. 14, 1942. Several factors limit the population under discussion here. Large numbers of physically fit 18 and 19 year old youths entered the armed forces by direct enlistment up to Dec. 12, 1942, when induction by enlistment was discontinued. The Selective Service System was notified when registrants enlisted in the armed forces but was not advised of the physical findings of either accepted or rejected volunteers. During the period represented by these data many youths remained in school or college under programs supported by the Army and the Navy which permitted them to finish a course of study before being called up for examination. Young men who had entered war industries or who were needed on farms and had been deferred because of occupation were not examined physically. The remaining 18 and 19 year olds whose order numbers were reached during December 1942 and January and February 1943 were called up for physical examination unless grounds for deferment existed, and it is this group of 18 and 19 year old registrants whose records are available for sampling and for study.

At local board physical examination, the physician was instructed to note whether or not certain manifestly disqualifying defects were present. At this time a blood sample was drawn for serologic test for syphilis. If one or more of the defects listed on D. S. S. Form 220, List of Defects, was present the registrant was rejected by the local board; if none of the listed defects were present the registrant was forwarded to an induction station, where Army physicians and civilian specialists gave him a complete physical examination.[2] Each defect noted was recorded and the important ones were listed at the foot of the physical examination form in the space labeled "Summary of defects in order of significance." Each defect listed in this space was coded and tabulated in the last three columns of figures in table 2. If the registrant was rejected at the induction station the cause or causes of rejection was stated. If two or more defects were present the one listed first was used as the cause of rejection unless this was clearly misleading, and such defects and causes of rejection at local boards have been tabulated in the first three columns of figures in table 2.

In this paper, registrants have been counted as rejected if they were not accepted for general military service. However, a substantial number of registrants who were not acceptable for general military service were inducted for limited service. If these men accepted for limited service only had been counted as inducted for the purposes of this paper the rejection rates would have been lower, particularly for rejections due to defective vision and musculoskeletal defects.

REJECTION RATES

Table 1 shows the local board and induction station rejection rates for white and for Negro registrants born in 1923 and 1924. Of the white youths called up for physical examination, 23.8 per cent were rejected either at local boards or at induction stations. The corresponding rejection rate for Negro youths was almost twice as high, 45.5 per cent.

The rejection rates for 18 and 19 year old registrants are only slightly lower than the rejection rates for older registrants, but caution should be exercised in drawing conclusions from this since, as noted previously, a large proportion of physically fit youths were not liable for examination either (*a*) because of previous enlistment in the armed forces, (*b*) because of programs that postponed examination and induction until a course of training has been completed or (*c*) because of employment in war industry or agriculture.

From the Medical Division and the Division of Research and Statistics, National Headquarters, Selective Service System.

1. A previous article (Rowntree, L. G.; McGill, K. H., and Falk, O. H.: Health of Selective Service Registrants, J. A. M. A. **118**: 1223-1227 [April 4] 1942) summarized data on 19,923 Reports of Physical Examination, D. S. S. Form 200, for registrants and volunteers 18 to 36 years of age made during the period November 1940 through May 31, 1941.

2. Standards of Physical Examination During Mobilization, MR 1-9, Oct. 15, 1942, supplemented by Change 1, dated Jan. 22, 1943, and by instructions issued by the Office of the Adjutant General, SPX 324.71 (1-22-43) PR-I, Joint Induction Procedure of the Army, Navy, Marine Corps and Coast Guard, defined the physical standards in force at induction stations during the period represented by these data.

LEADING CAUSES OF REJECTION

The chart is based on the data of table 2 and shows, by the lengths of horizontal bars, the relative importance of the ten leading causes of rejection among white and among Negro 18 and 19 year old registrants. Later sections of this paper will discuss each of these defect groups in detail. The following discussion is concerned only with certain general relationships.

TABLE 1.—*Rejection Rates of 18 and 19 Year Old Registrants* *
Rejections per Hundred Examined

	Rejection Rate		
	White and Negro	White †	Negro
Local board	5.2	4.3	16.5
Induction station ‡	21.3	20.4	34.8
Combined rate §	25.4	23.8	45.5

* Based on a sample of 45,586 reports of physical examination and induction, D. S. S. Form 221, for 18 and 19 year old registrants. Registrants deferred at local board for reasons other than physical or mental defect are not included.

† Includes all races other than Negro.

‡ Based on the number of registrants who passed a local board physical examination and were forwarded to an induction station for examination.

§ Based on the number of registrants examined at local board who were rejected at local board or induction station.

The most striking difference between the two racial groups concerns the high rate of rejections among Negroes for educational deficiency and for syphilis. Educational deficiency accounted for 121.7 rejections per thousand Negro youths examined, or for 26.7 per cent of all Negro rejections. Syphilis accounted for 112.0 rejections per thousand examined, or for 24.6 per cent of all Negro rejections. The two conditions together accounted for slightly more than half of all rejections of Negro youths. Eye defects and mental disease, the leading causes of rejection among white youths, ranked seventh and fourth respectively among Negro youths.

Other defects appear on each of the two lists of ten leading causes of rejection but with different rank among white youths and Negroes. Thus, musculoskeletal defects are in third place among white youths and in fifth place among Negroes, and cardiovascular defects are fourth in importance among white youths and third among Negroes. Ear defects and underweight appear on the list of ten leading causes of rejection among white youths but are not important as causes of rejection among Negroes. Conversely, syphilis and tuberculosis, listed among the first ten causes of rejection for Negroes, are lower in order of importance among white youths. Further comparative data may be found in table 2 and in the discussion which follows.

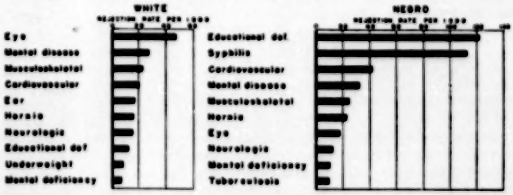
Similar lists are obtained by ranking the ten leading causes of rejection among registrans 20 years of age and older as shown on D. S. S. Form 221 representing examinations made in the same period. Tuberculosis stands in ninth place and syphilis in tenth among white youths 20 years of age and older, displacing underweight and mental deficiency. Among Negroes, tuberculosis is in ninth place and mental deficiency in tenth, reversing their order in the 18-19 year age group. Among older Negroes syphilis is the leading cause of rejection, accounting for 28.7 per cent of all rejections. The other differences in rank of causes of rejection between the two age groups of each race are of minor importance.

During peacetime examinations made November 1940 through May 1941, when different physical standards were in force, the ten leading causes of rejection for white and Negro registrants combined, aged 21 to 36, were, in order, teeth, eyes, cardiovascular defects, musculoskeletal defects, venereal diseases, mental and nervous defects, hernia, ears, feet, and tuberculosis and other lung defects.[1] Since that time the standards affecting vision, teeth and educational qualifications have been revised, and increased attention has been devoted to the psychiatric examination.

CAUSE OF REJECTION AND INCIDENCE OF DEFECTS

Table 2 shows how frequently each of ninety-six diseases and defects was listed as cause of rejection and how frequently each was listed as present among all registrants examined, among white registrants and among Negro registrants. Data are expressed both in terms of the number of rejections and in terms of the number of cases per thousand registrants examined. The following discussion of the data of table 2 is largely limited to defects which are important as causes of rejection and to diseases or conditions whose occurrence can be prevented or controlled.

Eye defects, and in particular defective vision, have been a leading cause of rejection throughout the entire period of administration of the Selective Training and Service Act of 1940. The visual standards for general military service that became effective on Oct. 15, 1942 specified visual acuity of "not less than 20/200 in each eye without glasses if correctable to at least 20/40 in each eye." On Feb. 1, 1943, when joint Army-Navy induction stations began operation, the visual standards for general service were changed to "minimum vision of 20/70 in one eye and in the other eye at least 20/25 without glasses or acuity of vision of 20/25 with both eyes open without glasses, provided the vision in the worse eye is not less than 20/70."[2] These data represent examinations made under both sets of standards. Some of the youths shown here as rejected for general military service because of eye defects were inducted for limited military service. Eye defects were cause of rejection of 44.9 registrants per thousand examined and were noted as present in 101.5 registrants per thousand examined. They were much more important as causes of rejection and in total incidence among white youths than among Negroes.



Ten leading causes of rejection by race, 18-19 year old registrants, December 1942-February 1943.

Ear defects, most of them specified as otitis media or as defects of the tympanic membranes (presented in table 2 under "other ear defects") were more prevalent and were more important as causes of rejection among white youths than among Negroes. This agrees with data for older registrants in this and other time periods.

1. Instructions issued by the Office of the Adjutant General, SPX 324.71 (1-22-43) PR-I.

Most of the rejections for ear defects occurred at induction station examination.

Dental defects were numerous, particularly in white registrants, but they were unimportant as cause of rejection during this time period. Before February 1942, when the standards for general military service required that registrants have at least 12 serviceable teeth, 8 of which must be in the upper jaw and 4 in the lower jaw, a registrant was rejected for dental defects if he had fewer than 12 serviceable teeth. Since February 1942, however, registrants have been rejected for dental defects only if they have fewer than 8 serviceable teeth, 4 of which must be in the upper jaw and 4 in the lower jaw. Registrants who have 8 serviceable teeth, 4 of which are in the upper jaw and 4 in the lower jaw, are considered to have sufficient teeth for adequate mastication, provided they are free from gross dental infections and have a minimum requirement of an edentulous upper jaw and/or an edentulous lower jaw, corrected or correctable by a full denture or dentures."

Tuberculosis is one of the defect groups in which Negroes have higher rates of incidence and higher

TABLE 2.—*Causes of Rejection and Incidence of Defects of 18 and 19 Year Old Registrants Examined at Local Boards and Induction Stations* *

Defect or Defect Group	Number of Registrants Rejected per 1,000 Examined			Number of Cases Found per 1,000 Examined		
	Total	White †	Negro	Total	White †	Negro
Total, all causes	253.5	237.9	455.0	660.9	694.2	690.5
Eyes	44.9	47.1	17.2	101.5	106.4	38.0
Blindness, bilateral	0.2	0.2	...	0.2	0.2	...
Blindness, unilateral	1.8	1.8	1.5	2.2	2.2	2.1
Eye diseases	18.5	19.1	11.2	28.1	28.9	17.5
Defective vision	24.4	26.0	4.5	71.0	75.1	18.4
Ears	15.0	16.0	1.8	25.2	26.9	4.2
Deafness, bilateral	0.3	0.3	0.3	0.3	0.3	0.3
Deafness, unilateral	0.1	0.1	...	0.1	0.2	...
Otitis media	10.3	11.0	0.9	10.9	11.7	0.9
Ear defects, other	3.7	4.0	0.3	10.3	11.0	1.5
Defective hearing	0.6	0.6	0.3	3.6	3.7	1.5
Teeth	0.8	0.8	0.9	102.0	107.0	38.6
Dentures	...‡	...‡	...	7.9	8.3	2.7
Missing teeth	0.2	0.2	...	54.7	58.4	7.8
Caries	0.2	0.2	...	28.1	28.4	25.1
Dental defects, other	0.4	0.4	0.9	11.3	11.9	3.0
Mouth and gums	0.6	0.6	0.9	7.5	7.8	3.6
Nose	2.6	2.8	0.6	21.2	22.6	3.3
Sinusitis	0.6	0.6	0.3	1.2	1.2	0.3
Vasomotor rhinitis	0.8	0.8	0.3	5.3	5.7	0.9
Nasal diseases and deformities	0.3	0.4	...	1.6	1.7	...
Nasal obstruction	0.9	1.0	...	13.1	14.0	2.1
Throat	0.3	0.3	0.6	7.3	7.6	3.0
Tonsil defects	0.1	0.1	0.6	6.7	7.0	3.0
Throat defects, other	0.2	0.2	...	0.6	0.6	...
Lungs	6.0	6.0	6.3	10.7	10.7	9.7
Asthma	3.7	3.6	5.1	5.3	5.2	6.7
Lung defects, other than tuberculosis	2.3	2.4	1.2	5.4	5.5	3.0
Tuberculosis	6.8	6.6	9.7	8.0	7.7	11.5
Tuberculosis, active pulmonary	1.4	1.4	1.8	1.5	1.4	1.8
Tuberculosis, other	0.2	0.2	...	0.2	0.3	...
Tuberculosis, arrested pulmonary	3.2	3.0	5.8	3.7	3.4	7.0
Tuberculosis, suspected or unspecified pulmonary	2.0	2.0	2.1	2.6	2.6	2.7
Cardiovascular	21.4	19.8	41.7	31.7	30.6	46.2
Cardiovascular diseases other than rheumatic or valvular	1.1	1.1	0.6	1.1	1.2	0.6
Rheumatic heart disease	2.9	3.1	0.6	3.1	3.3	0.6
Valvular heart disease	12.0	10.8	27.2	12.8	11.6	27.8
Cardiac hypertrophy	0.7	0.5	2.4	0.9	0.7	2.7
Hypertension, arterial	3.6	2.2	8.5	3.4	2.9	9.4
Cardiovascular defects, other	0.9	0.8	1.5	2.3	2.4	1.5
Tachycardia	1.2	1.2	0.9	2.1	2.2	1.2
Cardiac arrhythmia	...	...	...	0.7	0.8	...
Functional murmurs	...‡	...‡	...	5.3	5.5	2.1
Blood and blood forming organs	0.2	0.2	...	0.4	0.5	...
Hernia and relaxed rings	16.3	15.9	22.3	25.2	25.2	24.8
Inguinal hernia	14.8	14.6	18.4	16.2	16.0	19.1
Abdominal hernia	1.0	0.8	3.6	1.6	1.3	5.1
Hernia, other and unspecified	0.4	0.4	0.3	2.2	2.3	0.3
Relaxed inguinal rings	0.1	0.1	...	5.2	5.6	0.3
Kidneys and urinary system	4.2	4.4	1.8	8.6	9.0	3.6
Nephritis and pyelonephritis	1.2	1.2	...	1.3	1.4	...
Kidney and bladder defects, other	0.7	0.8	...	1.1	1.2	...
Urinary findings, abnormal	2.3	2.4	1.8	6.2	6.4	3.6
Abdominal viscera	1.3	1.3	1.5	2.3	2.3	2.4
Gastric ulcer	0.6	0.6	0.6	0.7	0.7	0.6
Gastrointestinal defects, other	0.7	0.7	0.9	1.6	1.6	1.8
Genitalia	4.2	3.8	9.1	33.7	34.0	29.3
Testicle, absence or atrophy of	0.1	0.1	...	2.6	2.7	1.2
Testicle, undescended	2.6	2.6	3.0	4.0	3.9	3.9
Varicocele	0.2	0.1	0.9	18.3	19.2	9.4
Genital defects, other	1.3	1.0	5.5	8.8	8.1	17.8
Syphilis	10.2	2.2	112.0	12.2	3.2	126.5
Neurosyphilis	0.1	0.1	...	0.1	0.1	...
Cardiovascular syphilis	...	...	...	...	...	...
Syphilis, other	3.2	0.6	56.5	4.1	1.1	42.9
Positive serologic reaction	6.9	1.5	75.5	8.0	2.0	83.6
Gonorrhea and other venereal diseases	0.8	0.2	8.8	2.7	1.1	23.3
Gonorrhea	0.6	0.1	7.0	2.5	1.1	20.6
Venereal infection, other	0.2	...‡	1.8	0.2	...‡	2.7
Skin diseases and conditions	2.5	2.3	5.1	15.7	16.2	8.8
Hemorrhoids and other rectal defects	0.2	0.2	...	2.7	2.8	2.4
Varicose veins	0.7	0.7	0.9	2.7	2.8	1.8
Educational deficiency	19.5	11.5	121.7	28.4	19.8	139.2
Mental deficiency	7.0	6.8	10.0	8.5	8.2	12.4
Moron, idiot and imbecile	3.7	3.6	5.5	4.1	3.9	6.4
Mental deficiency, unspecified	3.3	3.2	4.5	4.4	4.3	6.0
Mental diseases	27.6	27.2	32.0	33.2	33.1	35.3
Grave mental or personality disorders	3.5	3.5	2.4	3.6	3.7	2.4
Major abnormalities of mood	0.7	0.7	0.3	0.8	0.9	0.3
Psychopathic personality	7.5	7.2	12.1	8.2	7.9	13.3
Psychoneurotic disorders	15.2	15.1	16.3	19.7	19.8	18.1
Chronic inebriety and drug addiction	...‡	...‡	...	0.1	...‡	0.3
Mental disease not classifiable elsewhere	0.7	0.6	0.9	0.8	0.8	0.9
Neurologic	14.8	15.0	12.1	17.5	17.8	14.2
Epilepsy	3.2	3.1	5.2	3.4	3.3	5.5
Chronic encephalitic syndrome	0.3	0.3	...	0.4	0.4	...
Posttraumatic cerebral syndrome	2.0	1.9	2.1	2.1	2.1	2.4
Poliomyelitis, residuals of	4.2	4.4	2.1	4.7	4.8	2.7
Neurologic defects, other	5.1	5.3	2.7	6.9	7.2	3.6
Musculoskeletal	27.7	27.6	24.2	59.0	60.6	39.3
Amputation	2.8	2.7	3.9	5.0	4.9	6.3
Osteomyelitis	2.4	2.5	0.6	2.6	2.8	0.6
Ankylosis	0.9	0.9	0.9	1.2	1.2	2.1
Arthritis	0.5	0.5	0.6	0.8	0.8	0.6
Atrophy	1.4	1.4	1.5	1.8	1.8	1.8
Injury, residuals of	7.1	6.9	10.3	11.8	11.7	13.0
Spinal malformations	1.7	1.6	2.1	13.1	13.6	6.4
Musculoskeletal defects, congenital and other	5.9	6.1	4.3	22.7	23.8	8.5
Feet	4.8	4.9	3.6	49.6	51.2	29.9
Pes planus	3.5	3.5	3.6	43.0	44.3	28.7
Foot defects, other	1.3	1.4	...	4.6	4.9	1.2
Endocrine disturbances	3.9	4.1	0.6	6.2	6.6	0.9
Diabetes mellitus	1.6	1.7	0.3	1.6	1.7	0.3
Fröhlich's syndrome	1.1	1.1	...	2.6	2.8	...
Thyroid disturbances	0.5	0.6	0.3	1.0	1.0	0.3
Endocrine disturbances, other	0.7	0.7	...	1.0	1.1	0.3
Neoplasms	1.6	1.5	1.8	5.7	6.0	3.0
Malignant growths	...‡	...‡	...	...‡	0.1	...
Neoplasms, other	0.7	0.6	1.8	2.4	2.3	3.0
Pilonidal cysts	0.8	0.9	...	3.3	3.6	...
Infectious and parasitic diseases	0.4	0.3	1.2	0.5	0.4	1.2
Other diseases and defects	10.9	11.2	6.6	60.0	62.0	34.1
Overweight	0.9	0.9	0.3	29.2	30.0	18.4
Underweight	7.1	7.3	2.4	25.9	27.2	9.1
Overheight	0.1	0.1	0.6	0.2	0.1	0.6
Underheight	0.9	0.8	1.2	1.0	1.0	1.5
Diseases and defects, other	1.9	1.9	2.1	3.7	3.7	4.5
Nonmedical reasons	1.3	1.4	...	2.0	2.1	...
Total number examined	45,585	42,273	3,312	45,585	42,273	3,312

* Based on a sample of 45,585 reports of physical examination and induction, D. S. S. Form 221, for 18 and 19 year old registrants.
† Includes all races other than Negro. ‡ Less than 0.05 per thousand.

specified that a man must have three pairs of opposing natural masticators and three pairs of opposing natural incisors, the number of men disqualified because of missing teeth was so large as to make dental defects the leading cause of rejection. The standards in effect during the time period under discussion authorized induction of "individuals who are well nourished, of rejection rates than white registrants. When tuberculosis was present it was usually entered as the cause of rejection. It accounted for the rejection of 9.7 Negroes per thousand examined and of 6.6 white registrants per thousand examined. At induction stations, where most of the tuberculosis rejections occurred, diagnoses could be based on the chest x-ray examina-

tions made routinely of all registrants. Local boards were authorized to reject registrants with an authentic history of active tuberculosis of any part of the body or treatment therefor within the preceding five years.

Cardiovascular disorders were also more frequently found in Negro youths than in white youths, in particular valvular heart diseases and hypertension. This is in agreement with experience with older groups of registrants. Most of the rejections for cardiovascular conditions took place at induction stations.

Hernia was more often a cause of rejection among Negroes than among white persons. A part of this difference was due to the more frequent occurrence of umbilical hernias in Negroes. The physical standards provided that relaxed inguinal rings in themselves were not to be considered as a cause of rejection unless there was a definite protrusion of an abdominal viscus into a hernial sac. Relaxed inguinal rings were more frequently noted in white registrants than among Negroes.

In September 1942 the War Department announced that the Army would accept men with uncomplicated gonorrhea in a number not to exceed 2 per cent of the daily induction at each induction station for each

TABLE 3.—*Rejection Rates, by Broad Occupational Group, of 18 and 19 Year Old Registrants*

Occupation Group	Rate per Hundred Examined		
	White and Negro	White *	Negro
All occupations	25.4	23.8	45.5
Professional and semiprofessional workers	20.5	20.5	†
Farmers	41.1	36.4	58.0
Proprietors, clerical, sales and kindred workers	21.0	20.9	26.9
Craftsmen, foremen and kindred workers	20.4	19.9	39.6
Operatives and kindred workers	22.2	21.6	39.6
Service workers	28.9	25.8	35.9
Laborers except farm and mine	38.2	35.5	46.0
Emergency workers and unemployed	37.7	37.2	44.0
Students	23.3	23.0	31.6

* Includes all races other than Negro.
† Insufficient data for calculation of rate.

race, the proportion to be determined by available hospital facilities. During February 1943 the induction of registrants with uncomplicated syphilis began. Previously these diseases had been cause for rejection. Syphilis was recognized in the majority of cases by the result of serologic test of the blood sample drawn by the local board physician. The striking difference between rejection rates for white registrants and for Negroes has already been commented on. The increase in incidence of syphilis with advancing age is brought out in the tabulations of serologic test report forms compiled and published by the U. S. Public Health Service in cooperation with the Selective Service System.[4] A large proportion of the registrants found to have gonorrhea were inducted. Gonorrhea was more prevalent and accounted for more rejections among Negroes than among white registrants.

Determination of educational deficiency and of mental deficiency was made at induction stations on the basis of psychometric tests designed to measure the individual's capacity to absorb basic training. Large numbers of registrants with meager schooling or with language difficulties have been inducted and given special training. Because facilities for special training are limited, quotas had to be set on the number of educationally deficient registrants who could be inducted.

Mention has already been made of the importance of mental disease as a cause of rejection. Although as a cause of rejection among Negroes it is outranked by educational deficiency and by syphilis, the rejection rate and the incidence for Negroes is slightly higher than the corresponding rates for white persons. The title "grave mental and personality disorders" includes schizophrenia or dementia precox, paranoia and related psychoses. The title "major abnormalities of mood" includes manic-depressive psychosis and cyclothymic disorders. "Psychopathic personality" includes constitutional psychopathic inferiority, criminal record and sexual psychopathy. "Psychoneurotic disorders" includes the various manifestations of psychoneurosis and certain psychosomatic disorders, including neurocirculatory asthenia, functional gastrointestinal syndrome, stuttering, stammering and tics. Inebriety and drug addiction are rarely recorded in this age group but increase in prevalence with advancing age.

A large proportion of the registrants with neurologic defects were rejected at local board physical examination, in part because a number of neurologic defects appear on the list of manifestly disqualifying defects and in part because of the use of information available in the registrant's community for establishing or confirming diagnoses of epilepsy or other disease of the nervous system.

Somewhat less than half of the rejections for musculoskeletal defects took place at local board examination. Many terms descriptive of bone, muscle and joint disorders appear in the list of manifestly disqualifying defects. Defects resulting from injury are more numerous than other categories of musculoskeletal defects. They include limited motion of joints, malunion of a fracture with bowing, shortening or deformity, and scars that result in contracture.

Underweight and overweight were more common among white youths than among Negro youths. No data were recorded on the examination form to show how frequently this or any other defect could be presumed to be the result of malnutrition. Entries on the physical examination form were usually restricted to objective findings with only infrequent references to history or to the cause of the condition under discussion.

REJECTION RATES BY OCCUPATION

Table 3 permits comparison of the rejection rates in nine broad occupation groups. Among white youths, craftsmen, foremen and kindred workers (comprising skilled workers) had the lowest rejection rate, 19.9 rejections per hundred examined; farmers, with 36.4, and emergency workers, with 37.2 rejections per hundred examined, had the highest rates of rejection. Among Negroes, proprietors, clerical, sales and kindred workers, with 26.9 rejections per hundred, and students, with 31.6 per hundred examined, had the lowest rejection rates; farmers, with 58.0 rejections per hundred, had the highest rejection rates. Data on causes of rejection in the various occupation groups have not as yet been tabulated for this age group.

SUMMARY

The ten leading causes of rejection among white 18 and 19 year old Selective Service registrants were, in decreasing order of occurrence, eye defects, mental

4. U. S. Public Health Service: Results of Serological Blood Tests for Syphilis on Selective Service Registrants, 2 volumes multilithed, Venereal Disease Division, U. S. P. H. S., 1942. Volume 1 is based on the first million reports received during the period Nov. 1, 1940 to April 15, 1941; volume 2 is based on the second million reports received during the period April 16, 1941 to Aug. 31, 1941 for registrants examined in accordance with the Selective Training and Service Act of 1940.

disease, musculoskeletal defects, cardiovascular defects, ear defects, hernia, neurologic defects, educational deficiency, underweight and mental deficiency. For 18 and 19 year old Negroes the ten leading causes of rejection were educational deficiency, syphilis, cardiovascular defects, mental disease, musculoskeletal defects, hernia, eye defects, neurologic defects, mental deficiency and tuberculosis. Half of the rejections of Negro youths resulted from educational deficiency or from syphilis. These data are based on local board and induction station examinations made during December 1942 and January and February 1943.

In the following broad groups of defects, white youths had higher rejection rates than Negroes: eyes, ears, nose, kidneys, nervous system, feet, endocrines, overweight and underweight.

In the following broad groups of defects, Negro youths had higher rejection rates than white youths: tuberculosis, cardiovascular disease, hernia, genital disease, syphilis, gonorrhea, skin disease, educational deficiency, mental deficiency and mental disease.

POLIOMYELITIS AND PREGNANCY

WITH SPECIAL REFERENCE TO THE FAILURE OF FETAL INFECTION

TWO HITHERTO UNREPORTED CASES IN ONE OF WHICH THE HUMAN FETAL SPINAL CORD WAS EXAMINED FOR THE VIRUS

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This report will add further evidence to the thesis that now appears to be well established: that pregnancy has little, if any, influence on the course of poliomyelitis in a paralyzed mother and, conversely, that in utero infection of the fetus occurs with rarity, if at all. The corollary that acute poliomyelitis in the mother has no effect on the fetus is questioned by one of our cases in which fetal death occurred in utero presumably as a result of asphyxia associated with faulty oxygenation of the maternal blood during the acute course of bulbar poliomyelitis. In the past several years several reports and studies of this question have been published which have established the two facts first mentioned almost beyond doubt. The reason for the report of one of the cases described is that an opportunity was present to examine the fetal spinal cord for virus. The results of this examination were negative, which would add further evidence in favor of the contention that the virus of poliomyelitis, under the natural occurrence of these events simultaneously in man, does not pass from mother to child. There are probably several reasons to explain this phenomenon. As is generally agreed by many investigators,[1] the virus of poliomyelitis is found with rarity, if at all, in the circulating blood stream of a victim of this disease. Presumably, to favor transmission of a virus through the placenta, the infectious agent should gain ready access to the blood stream. There is ample evidence both clinical and experimental to show that, in other conditions in which it is known that a submicroscopic virus is present in the blood stream, the related virus passes through the placenta and may infect the fetus. These experimental data include the observation of Levaditi, Harvier and Nicolau,[2] who demonstrated that one of the viruses from encephalitis in man can, when inoculated into rabbits, pass the placenta and localize in the fetal nervous system. Goodpasture [3] has also demonstrated passage of vaccinia through the placenta and in the same review considers the evidence to have conclusively shown that the viruses of measles, chickenpox and lymphocytic choriomeningitis can regularly pass the placenta. Hirano [4] demonstrated that vaccine virus can penetrate the placental barrier. Traub [5] has shown that the virus of lymphocytic choriomeningitis can pass readily from the mother to the in utero young and the latter can harbor the infection acquired congenitally for a prolonged time.

In the clinical literature Welz [6] reported a fetal mortality of 66 per cent in his series of 21 cases of maternal influenza. Abt and Townsend [7] each reported single cases of premature infants born of mothers suffering from influenza, who showed signs of the disease at birth. Kosmak [8] likewise reported fetal deaths in cases of maternal influenza. In the fatal child cases just referred to, no autopsies which included virus studies were reported. Marinesco [9] and Kononowa [10] each reported fatalities in infants born of mothers suffering from epidemic encephalitis. Each of these 2 latter cases were instances in which microscopic lesions of encephalitis were demonstrated in the brain of the fetus but no virus studies were reported. There are many other reports in the literature of fatalities and cases in the fetus issuing from women the victims of epidemic encephalitis, but the latter cases do not contain data indicating that examination of the central nervous system of the fetus was made and therefore are not valuable to corroborate the point at issue. The virus of encephalitis, at least of the equine and related types, which are probably responsible for much of the "sporadic" and epidemic encephalitis in man, differ in two important respects from poliomyelitis virus: the former occurring in the blood stream of at least the animal intermediate hosts and in the cerebrospinal fluid in man.[11]

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1. Reviewed in Poliomyelitis: A Survey Made Possible by a Grant from the International Committee for the Study of Infantile Paralysis, Baltimore, Williams & Wilkins Company, 1932, p. 73. Thompson, R.: Experiments with the Virus of Poliomyelitis, J. Exper. Med. **51**: 777, 1930. Gordon, F. B., and Leonette, E.: The Blood Stream in Experimental Poliomyelitis, J. Infect. Dis. **64**: 97, 1939.

2. Levaditi, C.; Harvier, P., and Nicolau, S.: Transmission experimentale du virus de l'encéphalite, Compt. rend. Soc. de biol. **84**: 957, 1921.

3. Goodpasture, E. W.: Virus Infection of the Mammalian Fetus, Science **95**: 391, 1942.

4. Hirano, T.: Placental Permeation by Vaccinia Virus and Viruliedal Substance, Sei-I-Kai M. J. (Abstr. Sec.) **55**: 13, 1936.

5. Traub, E.: Epidemiology of Lymphocytic Choriomeningitis in Mouse Stock Observed for Four Years, J. Exper. Med. **69**: 801, 1939.

6. Welz, W. E.: Influenza Complicating Late Pregnancy and Labor, Am. J. Obst. **79**: 247, 1919.

7. Abt, I. A.: Influenza in a Newly Born Infant, J. A. M. A. **72**: 980 (April 13) 1919. Townsend, C. W.: A Case of Congenital Influenza, Arch. Pediat. **8**: 26, 1891.

8. Kosmak, C. W.: Influenza in Pregnancy, Am. J. Obst. **79**: 238, 1919.

9. Marinesco, G.: L'encéphalite épidémique et la grossesse, Rev. neurol. **37**: 1055, 1921.

10. Kononowa, cited in Epidemic Encephalitis, second report of the Matheson Commission, New York University Press, 1932, p. 55.

11. Meiklejohn, Gordon, and Hammon, W. M.: Epidemic of Encephalitis, Predominately St. Louis Type, in Pinal County, Ariz., J. A. M. A. **118**: 961 (March 21) 1942.

Two thorough studies of the obstetric experience of women in whom poliomyelitis occurred during pregnancy have been reported in recent years. The antecedent literature bearing on questions pertinent under this topic were thoroughly reviewed in both these reports, and thus no attempt will be made to summarize the literature bearing on this question here. The first of these reports was written by Brahdy and Lenarsky,[12] the subjects being 2 normal infants, 1 at term and the other premature, born of mothers suffering from acute poliomyelitis. These authors reported 1 case of their own and summarized others in the literature which showed that poliomyelitis may occur early in pregnancy as well as later. Their own case and others quoted from the literature showed that poliomyelitis had no influence on pregnancy and that as a result a normal issue was to be expected from mothers who developed this disease during the latter months of pregnancy. The most recent study is that of Kleinberg and Horwitz,[13] who studied all aspects of this topic, including the types of pelvic deformity resulting in women previously paralyzed by acute poliomyelitis and the obstetric histories of pregnancy in women previously paralyzed by poliomyelitis. In addition to summarizing cases of pregnancy complicated by an acute attack of anterior poliomyelitis from the literature they added 13 hitherto unreported cases. A review of the total of 29 such cases demonstrates that a normal child was obtained in 24 instances (82.8 per cent). The causes of stillbirth and of early fetal death which were recorded in 4 cases (13.8 per cent) were associated with prematurity. There was no evidence of postpoliomyelitic paralysis in any of the premature offspring or the children who died shortly after birth. In 1 case (Miller [14]) to be found in the literature a child with bilateral clubbed feet was delivered. The appearance of these feet was that of bilateral congenital clubbed feet the occurrence of which was probably unrelated to poliomyelitis in pregnancy. Kleinberg and Horwitz conclude that, "notwithstanding severe paralysis involving the abdominal and extremity muscles and occurring during gestation, a normal course of pregnancy and labor and normal offspring may be anticipated."

REPORT OF CASES

Case 1.—R. B., a woman aged 30, admitted to the Chicago Municipal Contagious Disease Hospital on Aug. 29, 1936, had first become ill five days previously with "cold and fever," according to the history obtained on admission. Two days later the left arm was paralyzed and the patient first experienced dyspnea. The patient was said to have been afebrile since the onset of paralysis three days prior to admission. The family physician had no opportunity to examine the patient until the morning of the day of admission, on which occasion he made a diagnosis of a six months pregnancy and stated that the fetal heart tones were then present.

On admission the patient was dyspneic and cyanotic, respirations being carried out by the abdominal and accessory respiratory muscles. The alae nasi dilated on inspiration. The patient was obviously fatigued. There was extensive paralysis in the left arm, and no reflexes were elicited in this member. The neck was rigid and the voice hoarse. Examination of the spinal fluid on admission showed a clear fluid under a moderate increase in pressure. Eighty cells per cubic millimeter were counted and the Ross-Jones test showed a moderate increase in globulin. On the day following admission the patient exhibited more exhaustion and was then placed in the respirator with some betterment in the cyanosis. On the third and fourth days of hospitalization the fetal heart tones were still heard and the patient was in and out of the respirator.

From the fifth hospital day a uterine souffle was heard but no fetal heart tones could be detected. On the sixth hospital day no fetal heart tones were detected and the patient was beginning to exhibit some abdominal pains. These, however, quickly subsided and the patient remained about the same until the tenth day, when she began to have frequent abdominal pains, exhibited some slight bloody vaginal discharge and during the course of the day began to have labor pains, which increased in severity and intensity. The cervix dilated during the day and delivery of a stillborn fetus occurred during the evening. As far as could be told from the examination of the fetus, which was slightly macerated, it had been dead for at least forty-eight hours and possibly longer. On the twelfth hospital day it was noted that the mother was breathing more easily on the occasions when she was out of the respirator, and on the twenty-first hospital day she was allowed out of the respirator the greater part of the day. From this point she pursued an uneventful course but continued to exhibit residual paralysis in the left upper extremity. Postmortem examination of the child was carried out on the same day as the stillbirth. The spinal cord was removed and preserved in 50 per cent glycerin.

Intracerebral inoculation of a Macacus rhesus monkey with the supernatant fluid from the ground emulsion of 0.3 Gm. of the fetal spinal cord was performed after preservation of the cord at 5 C. for forty days in 50 per cent glycerin. Daily observations were made of the rectal temperature of this animal for the ensuing twenty-six days. On four single observations a rise of almost 2 degrees was noted from a previous average normal of 101.6 F., but the animal showed no consistent signs which might be attributable to poliomyelitic infection. On the twenty-sixth day the monkey was killed and the cord removed for microscopic study. Sections prepared at four levels of the spinal cord failed to show any lesions characteristic of the disease. An attempt at further passage of the latter material into a second monkey produced no symptoms.

Case 2.—R. C., a woman aged 32, was in good health until during the eighth month of pregnancy, when on Sept. 3, 1942 she was seized with nausea and vomiting, which continued for three days. The attending physician did not consider the possibility of poliomyelitis until the fourth day of illness, when the patient suddenly noticed that she could not elevate the right leg and at the same time noted weakness in the right arm. She also experienced a "choking sensation" in the throat, and at the same time dysarthria and dysphagia were present. For the ensuing several days she experienced severe backache. This disappeared with back strapping and did not subsequently return. The patient was subsequently referred to another hospital, where she received the hot moist pack treatments for paralysis (Kenny method). The results from this treatment were considered to be only partially successful. Symptomatic relief could not be credited to the treatment, as the patient was free from pain at the time when the packs were begun. She was admitted to the Guthrie Clinic and Robert Packer Hospital on Dec. 26, 1942, at which time a residual paralysis was noted in the muscles of the right shoulder girdle, in the left leg and in the entire lower right extremity. Extensive muscle atrophy was noted in the right shoulder girdle and throughout the entire lower extremity. The paralysis in the right upper extremity included the rhomboideus major and minor muscles, the trapezius, latissimus dorsi and a portion of the serratus anterior, which resulted in definite winging and dropping of the scapula on attempts to move the upper extremity. Contractures were present in the trapezius. Clawing of the toes was noted in the left foot on attempts at dorsiflexion, and contractures were present in the short flexors of this foot, producing a pes cavus. The anterior and posterior

12. Brahdy, M. B., and Lenarsky, Maurice: Acute Epidemic Poliomyelitis Complicating Pregnancy, J. A. M. A. **101**: 195 (July 15) 1933.
13. Kleinberg, Samuel, and Horwitz, Thomas: The Obstetrical Experience of Women Paralyzed by Acute Anterior Poliomyelitis, Surg., Gynec. & Obst. **72**: 58 (Jan.) 1941.
14. Miller, N. F.: Anterior Poliomyelitis Complicating Pregnancy with Report of Two Cases, J. Michigan M. Soc. **23**: 58, 1924.

tibial muscles were functioning in this foot but were weak, since the foot went into valgus on attempts at dorsiflexion. The right lower extremity was completely flail except for moderate action of the gluteus maximus and a faint trace of function in the short flexors of the toe.

Regarding the patient's obstetric experience, induction of labor was performed on Sept. 7, 1942 and delivery of a normal, viable child resulted. To date, ten months after birth, the child is progressing well and is apparently normal. There is no evidence of paralysis in the offspring.

COMMENT

Case 2 illustrates the usual and average experience of the pregnant patient who acquires acute poliomyelitis: There is a normal issue assisted by a minimum of operative intervention, which is of the same type as required in nonparalyzed gravid patients. Both this case and the previous one lend weight to the accumulating mass of evidence in the literature that congenital poliomyelitis does not occur. The summary of the experience of other physicians with this complication as related in the reports of Brahdy and Lenarsky and Kleinberg and Horwitz are in agreement on this point. In this connection Kleinberg and Horwitz say:

> We conclude that pregnancy complicated by acute anterior poliomyelitis may be anticipated to progress normally, with a normal termination of labor and with a normal offspring. The involuntary contractions of the uterus and the ability of the uterus to expel its contents spontaneously observed also in patients paralyzed by cord tumors, spondylitis and vertebral fracture are due to the fact known to physiologists that the uterus has an independent nerve supply and will contract not only after the spinal cord is transected but even after its sympathetic nerve supply is extirpated. There was no instance of intrauterine poliomyelitis in these 29 cases. The passive immunity of the offspring derived from the mother does not persist for long, since a number of cases of acute anterior poliomyelitis under the age of 1 month (earliest, 9 days) have been reported. An analysis of 243 patients, who became pregnant one year or more subsequent to an acute attack of anterior poliomyelitis, indicates that a normal and uneventful pregnancy and labor with a normal offspring may be anticipated in these cases. There is no indication for interruption of the pregnancy at any stage except for those reasons that would be operative also in nonparalytic females. The complications prior to and following delivery in paralytic females are, on the percentage basis, almost identical with those in nonparalytic females.

The outcome in case 1 does demonstrate that death of the fetus may occur under certain circumstances during the course of acute poliomyelitis. The cause of fetal death in this instance was not ascertained with certainty but it is highly probable, from the clinical course of this case, during which time the mother definitely demonstrated anoxia in association with nonfatal bulbar poliomyelitis, that it was an asphyxial death. The problems raised in this connection are of considerable weight. Owing to the average excellent outcome in most cases of poliomyelitis one is reluctant to recommend operative delivery, since it is apparent from a perusal of the literature that it has been unnecessarily employed in the past.

However, it would appear that delivery by cesarean section (preferably laparotrachelotomy under local anesthesia and without giving drugs which might create further maternal and fetal anoxia, e. g. morphine) would be indicated in a restricted number of cases in which the outcome as regards the mother is in doubt but where there is great desire to secure a viable fetus. Such cases would be those of the general type as illustrated by our case 1. However, if such a procedure had been adopted it is even somewhat questionable as to whether the outcome would have been different in our case, as fetal death occurred shortly after hospitalization and occurred at a time when the condition of the mother, although critical, was not unduly alarming.

The importance of our case 1 lies in the attempt which was made to demonstrate the presence of virus in the fetal spinal cord. The conditions under which this attempt was made were as ideal as possible under the circumstances. It is improbable that the delay between removal of the cord and the inoculation of the monkey (forty days) had any bearing on the negative result obtained, as it is known that poliomyelitis virus remains viable in the spinal cord preserved in 50 per cent glycerin for many years.

The fact that virus is not found in the fetal spinal cord is to be expected rather than the reverse, as several events would have to be postulated concerning which facts are in disagreement. The virus is not found in the blood with any regularity, if at all, in either human patients or in simians in which the disease is experimentally induced. Even if it should be assumed that the virus could pass the placenta, which is indicated as a possibility, provided the virus could gain access to the blood stream (analogy to other viruses), it would still have to be assumed that some irritative process was at work in the central nervous system of the fetus in order for infection to occur, since it is known that large quantities of the virus of poliomyelitis may be present in the blood stream in the absence of central nervous system irritation without causing subsequent infection. This situation results because of the impermeability of the blood cerebrospinal fluid barrier to the poliomyelitis virus. This barrier can be upset under certain experimental conditions and possibly in human patients (e. g., a spinal puncture performed on some rare occasions when virus is present in the blood stream). The special experimental conditions include the production of sterile abscesses in the brain (e. g., by starch), the inflammation of an aseptic meningitis (as produced by the intraspinal injection of horse serum) and other circumstances that result in disturbed equilibrium in the barrier.

CONCLUSIONS

Our case 2 demonstrated an outcome which is usual and to be expected in this complicated situation; i. e., apparently little or no effect by pregnancy on the extent of paralysis in the mother (?) and a viable, nonparalyzed fetus. This case and those previously reported in the literature would tend to demonstrate that congenital poliomyelitis does not occur.

Our case 1 demonstrates that under certain circumstances death of the fetus may occur, presumably from asphyxia. Whether operative delivery in our case 1 would have resulted in a different outcome is problematic, but the case of impending respiratory paralysis in the mother resulting in maternal and fetal anoxia is apparently the only situation which would indicate operative delivery. An attempt to isolate the virus of poliomyelitis from the fetal spinal cord in case 1 resulted negatively. This outcome, although not proof positive that virus was not present in the fetal spinal cord, could be interpreted in that way.

CONCEPTS OF MUSCLE DYSFUNCTION IN POLIOMYELITIS

BASED ON ELECTROMYOGRAPHIC STUDIES

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The importance of muscle "spasm" as a symptom of acute poliomyelitis has received emphasis since the Kenny [1] concepts of the symptomatology and treatment of this disease have come into prominence. Muscular pain, tenderness and shortening have been recognized for many years as characteristic features of acute poliomyelitis and have been described by different authors, particularly by Lovett [2] and by Ober,[3] who have advocated treatment with local heat in the form of hot fomentations and by gentle passive movements followed by active muscle reeducation. In recent studies of "spasm," Schwartz and his associates [4] have recorded electrical potentials from muscles in cases of acute poliomyelitis with a cathode ray oscillograph and found widespread hyperirritability to stretching, not only in muscles which appeared to be in "spasm," but also in their antagonists and in those clinically unaffected.

In addition to muscular "spasm," Kenny has emphasized functional paralyses of the antagonistic muscles, which she believes may not be truly affected by the disease but "mentally alienated." Kenny also describes another disorder of muscular function in poliomyelitis, "incoordination," which she ascribes to a "condition arising in the central nervous system in which the regulation and direction of nerve impulses is upset so that the natural rhythmic and cooperative action of associated muscles is disturbed." [5]

In order further to elucidate these concepts of muscle "spasm," "mental alienation" and "incoordination" we have studied the electrical discharges of muscles while at rest, during passive stretching and during voluntary contraction, both in the early and in the late stages of poliomyelitis. The observations have been compared with similar studies on normal controls and on patients having traumatic lesions of peripheral nerves. These investigations have yielded information on the disorder of muscle function in poliomyelitis and have led us to conclude that the Kenny concepts of muscle involvement in this disease, although the basis of an excellent type of treatment, are inadequate as a physiologic explanation of the dysfunction present.

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1. Kenny, Elizabeth: Treatment of Infantile Paralysis in Acute Stage, Minneapolis, Bruce Publishing Company, 1941.
2. Lovett, R. W.: The Treatment of Infantile Paralysis, ed. 2, Philadelphia, P. Blakiston's Son & Co., 1917.
3. Ober, F. R.: Treatment and Rehabilitation of the Poliomyelitic Patient, in Infantile Paralysis: A Symposium Delivered at Vanderbilt University, New York, National Foundation for Infantile Paralysis, Inc., 1941, pp. 159-189; Pain and Tenderness During the Acute Stage of Poliomyelitis, J. A. M. A. **120**: 514-515 (Oct. 17) 1942.
4. Schwartz, R. P., and Bowman, H. D.: Muscle Spasm in the Acute Stage of Infantile Paralysis, J. A. M. A. **119**: 923-926 (July 10) 1942.
5. Pohl, J. F., and Kenny, Elizabeth: Kenny Concept of Infantile Paralysis and Its Treatment, Minneapolis, Bruce Publishing Company, 1941, p. 55.

METHODS OF STUDY

Electromyograms were recorded by a standard ink-writing Grass electroencephalographic apparatus. The full details of the methods employed have been described elsewhere.[6]

Two different electrode technics have been used in this work. These consisted of: 1. Surface electrodes, made from solder disks approximately 1 cm. in diameter, applied to the skin over the muscle with electrode paste and adhesive tape. A third electrode is placed on a neutral point to act as a ground. 2. Coaxial needle electrodes, made by inserting an insulated core into a hypodermic needle (gage 24). These are placed in the substance of the muscle, and the outside of the needle is grounded. In some experiments synchronous recordings were made from the same muscle by the two electrode technics.

Insulated copper wire from the electrodes feeds the current through shielded leads into the preamplifier stage of a standard electroencephalographic apparatus. In the second stage of the apparatus the filters are arranged so as to pass high frequency potential changes, and the degree of amplification is varied according to the amount of electrical discharge. Calibrations with a standard input are made with every recording so that at any moment an exact assessment can be made of the actual voltages elicited from the muscle. The degree of amplification used was never greater than 1 cm. deflection for 100 microvolts, at which setting no electrical activity is recordable from normal muscles in relaxation.

The final recording is made with an ink-writing oscillograph on paper, which is usually run through at a speed of 6 cm. per second; this speed of paper has been found to give a satisfactory recording of the range of frequencies found in muscle activity.

CASE MATERIAL

Eleven cases of poliomyelitis were studied in various stages of the disease process over a period of two years. The results were compared with recordings from normal controls, from patients with peripheral nerve injuries, including war wounds, from patients with infectious polyneuritis and from patients with muscle spasm secondary to fractures. The electrical activity of muscles was studied in positions of maximum relaxation, during passive stretching and during voluntary contraction. In some cases correlative studies were done of the electrical excitability as measured by voltage-capacity curves and of work performance as recorded by an ergograph, following methods previously described.[6]

RESULTS

Spontaneous Electrical Discharges in Resting Muscles.—In normal cooperative persons we have observed, as has Hoefer,[7] that, when efforts are made to relax completely the musculature of an extremity by comfortable positioning and support, no action potentials are recorded. Hoefer's technics were similar to those used in our investigations. The occurrence then of spontaneous discharges from relaxed muscles examined by this technic indicates some abnormality and forms a point of study in cases of poliomyelitis.

6. Watkins, A. L.; Brazier, M. A. B., and Schwab, R. S.: Technics for Quantitating Muscle Function in Poliomyelitis and Other Motor Nerve Lesions, Arch. Neurol. & Psychiat., to be published.
7. Hoefer, P. F. A., and Putnam, T. J.: Action Potentials in Muscles in Normal Subjects, Arch. Neurol. & Psychiat. **46**: 201-218 (Aug.) 1939. Hoefer, P. F. A.: Innervation and "Tonus" of Striated Muscle in Man, ibid. **46**: 947-971 (Dec.) 1941.

Electromyograms were therefore recorded from muscles which were tender and painful on palpation or stretching (clinically in "spasm") and also from weak muscles not showing "spasm." In some instances the antagonists of the muscles exhibiting clinical evidence of "spasm" were the weaker muscles, although this was not uniformly true.

In the acute stage of the disease some low voltage discharges were found at rest, but only from the most weakened muscles and frequently not at all from the posterior muscles of the trunk and lower extremities, although clinically these muscles were quite tender and painful on stretching (fig. 1 *A*).

In the later stages of the disease, particularly beginning about the third month, in cases with considerable paresis, we have noted in the resting muscles the onset of spontaneous electrical discharges of a more striking character (fig. 1 *B*). These potentials were of higher voltage and were somewhat suggestive of motor unit activity as described by Weddell, Feinstein and Pattle.[8] The muscles which clinically showed the most loss of power gave rise to these discharges more frequently than

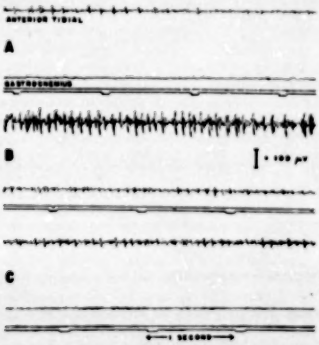

Fig. 1.—Spontaneous discharges in two resting muscles in poliomyelitis: the anterior tibial is the weaker muscle, whereas the gastrocnemius shows the most "spasm" clinically. *A*, three days after onset; *B*, three months later; *C*, five months after onset. Ink-writing oscillograph, surface electrode technic and calibration the same in all tracings.

did their antagonists, which usually showed clinical "spasm." This electrical activity appeared to be an index of weakness and could not be correlated with clinical "spasm." Similar spontaneous discharges have been found to persist for many months particularly in muscles with continuous improvement in function. In one case, followed for a year and a half, with good restoration of muscle power (as indicated by ergographic studies and manual tests of strength), the discharges were still present on the final examination although there was no pain, tenderness or other evidence of "spasm" clinically (fig. 2). In other cases, with only slight restoration of function, electrical discharges gradually lessened in incidence (fig. 1 *C*) and finally disappeared when the improvement ceased.

From these observations we conclude that the foregoing examples of electrical discharge are manifestations of a recovery process. This hypothesis is further substantiated by muscle studies during regeneration of traumatized peripheral nerves. From these muscles we have recorded similar electrical discharges. They appeared as an early sign of regeneration and persisted throughout the period of improving function (fig. 3).

Response of Muscles to Passive Stretching.—The response of muscles to passive stretching, during the early and late stages of poliomyelitis, was studied by electromyography. In these tests the muscles were stretched through the full arc of motion by a quick passive movement. During the acute stage this frequently brought out electrical discharges of a voltage higher than any which can be elicited from normal muscle by such a manipulation (fig. 4). Moreover, these discharges would persist for some time after the passive stretching had been released. In many instances a similar response was obtained by placing muscles under a slight increase of tension through adjusting the position of the limb. The appearance of these discharges was similar to those which we have recorded in patients with muscle spasm associated with painful joint motion following a recent fracture (fig. 5).

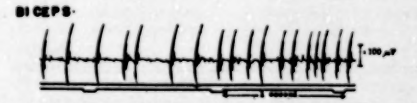

Fig. 2.—Spontaneous discharges in resting muscle with good recovery of strength one and one-half years after onset of poliomyelitis.

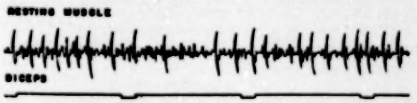

Fig. 3.—Spontaneous discharge from resting muscle during regenerative period after brachial plexus injury.

Although the voltage of the discharges gave an indication of the degree of irritability to passive stretching, we found that this abnormality occurred primarily in the partially paralyzed muscles, and only minimally in unparalyzed muscles which showed clinical "spasm." When there was equal degree of weakness in a pair of antagonistic muscles we found equal irritability on stretching as recorded electrically, even though clinically one muscle showed more "spasm." We conclude, therefore, that when one muscle is functionally weaker than its antagonist the weaker muscle will show the greater

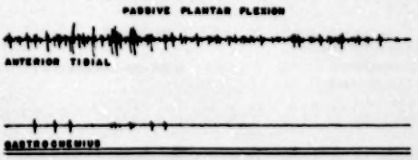

Fig. 4.—Electrical response to passive stretching in acute poliomyelitis.

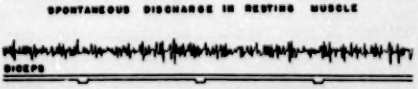

Fig. 5.—Muscle spasm in case of fractured elbow.

8. Weddell, Graham; Feinstein, Bertram, and Pattle, R. E.: Clinical Application of Electromyography, Lancet **1**: 236-239 (Feb. 20) 1943.

abnormality electromyographically. That this weakness is not due to "alienation," as suggested by Kenny,[1] but to greater involvement by the disease process was further substantiated by loss of electrical excitability in the weak muscles as measured by voltage-capacity curves.[6]

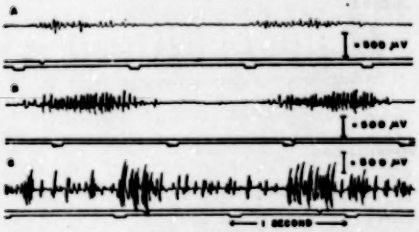

Fig. 6.—Action potentials during ergographic tests. Recordings from biceps. *A*, four months after onset of poliomyelitis; *B*, seven months; *C*, fifteen months.

In the later stages, during improvement of motor power, passive stretching accentuated the spontaneous discharges present in the weak muscles at rest. Again, the irritability was correlated with the degree of weakness and not with the degree of shortening, tenderness or other clinical sign of "spasm."

In the long-standing cases, several years after the onset, no abnormal response to stretching was obtained in paralyzed muscles or in those which were shortened by contracture but still functioning.

Electromyograms During Voluntary Contractions.—Action potentials were studied during voluntary contractions such as are required in an ergographic test.[6] The voltage of these discharges was found to be proportional to the degree of strength and gave indication of the rate of restoration of function (fig. 6). There was, however, no constant correlation between the voltage of spnotaneous discharges at rest and that of the action potentials.

Fig. 7.—Simultaneous action potentials in opposing muscles during active flexion and extension of the ankle in poliomyelitis.

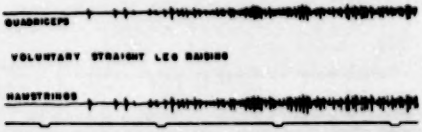

Fig. 8.—Synchronous action potentials in opposing muscles during active knee extension in poliomyelitis.

Observations were made during active movement, with simultaneous recording from antagonist and protagonist. By reciprocal innervation, inhibition of antagonists occurs during coordinated voluntary movements. Studying pairs of muscles, such as the anterior tibialis and gastrocnemius, or the quadriceps and hamstrings, we found in our patients with poliomyelitis that, on flexion or extension of the knee or ankle, the two opposing muscles were activated simultaneously (fig. 7). This phenomenon occurred in patients who were receiving muscle reeducation and were being specifically trained to avoid such "incoordination." In these cases simultaneous contraction of opposing muscles could be detected electrically, although not suspected on observation of the muscles in action.

In addition to the simultaneous action of opposing muscles we have observed in many instances that individual diphasic spikes were discharged synchronously in the pair of opposing muscles. This synchrony was apparent in the spontaneous discharges from resting muscles at times but was not consistently present. During a single examination, periods of synchronous discharges would come and go, being most frequently elicited by voluntary contractions (fig. 8). These synchronous action potentials have been found in

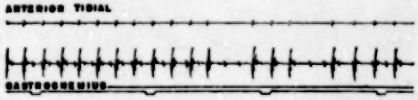

Fig. 9.—Synchronous action potentials in opposing weak muscles during active dorsiflexion fifteen years after onset of poliomyelitis.

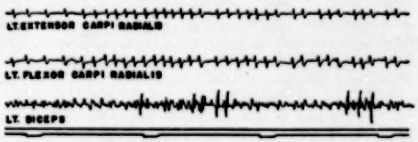

Fig. 10.—Spontaneous discharges in resting muscles during regeneration in brachial plexus injury. Note synchrony of individual spikes in upper two records.

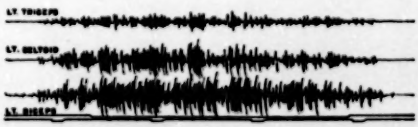

Fig. 11.—Simultaneous discharges in opposing muscles during active flexion of elbow after regeneration from brachial plexus injury.

patients whose poliomyelitis had occurred ten or fifteen years previously, as well as in patients in the early convalescent stage, and seem unrelated to the presence or absence of "spasm" in one or both of the muscles tested (fig. 9).

In studies of muscles during regeneration following traumatic peripheral nerve lesions we have observed similar synchrony of electrical discharges. The large diphasic spikes recorded from resting muscles have been found to occur synchronously in separate muscles at times and also asynchronously during the same recording period. This was illustrated in the case of a brachial plexus injury in which discharges occurred synchronously in two opposing muscles of the lower arm, whereas the discharges from the upper arm were asynchronous (fig. 10). In the same patient, on voluntary flexion of the elbow there were simultaneous action potentials from the biceps, triceps and deltoid without definite synchrony of individual spikes (fig. 11).

This synchronization of individual discharges was such an unexpected finding that we took every precaution to rule out the possibility of artefact. Since this

synchronization was not continuous but intermittent, it seemed unlikely that it could be due to the picking up by one amplifier of currents from its neighbor in the examining room. Furthermore, it was never found in normal controls. Careful efforts were made, however, to eliminate any possibility of such extraneous effects. Two different electrode systems were used: the surface electrodes were replaced by coaxial needles and the recording was run first on the push-pull circuit and then on the grounded circuit. Shifting of the electrodes from one position on the muscle to another was also tried. All these experiments led us to the same conclusion: that this type of synchronous discharge is a neuromuscular phenomenon.

These observations indicate that an important feature of poliomyelitis is a disorganization of normal reciprocal innervation. The similarity of findings in peripheral nerve injuries suggests that this disorganization is a manifestation of regeneration in the lower motor neuron.

COMMENT

Relatively little electrical activity was found in affected muscles during the acute stage of poliomyelitis as compared with that observed two or three months after the onset. These patients promptly received hot fomentations of the type described by Kenny,[1] with consequent reduction in muscle sensitivity.

The electrical response of muscles to passive stretching in our poliomyelitis patients resembled that seen in other conditions in which muscle spasm acted as a protective mechanism in response to pain, as in acute back strain, or painful joints associated with arthritis or with trauma. This similarity may indicate that the response is nonspecific as far as a neurologic disease is concerned being a reflex phenomenon stimulated by pain.

The spontaneous electrical discharges at rest, however, appeared to be unrelated to pain or other clinical evidence of muscle spasm. The correlation in this instance was with the degree of muscle weakness and consequently was an index of involvement of the neuromuscular system by the disease process. In completely paralyzed muscles, however, or in muscles much weakened in which there was no evidence of improving function, these spontaneous discharges were not obtained.

Because of the limitations in the speed of recording by ink-writing oscillographs, fibrillations of denervation are of too short duration to be recordable (1-2 milliseconds). The cathode ray oscillograph provides a more suitable recording speed for this purpose. Needle electrodes are unsatisfactory for detection of the fibrillations of denervation since they frequently act as an irritant to the muscle, causing discharges which should be regarded as artefacts; these confuse the records of spontaneous activity in resting muscle.

In our work with an ink-writing oscillograph, therefore, no fibrillations of denervation were recorded. The speed was, however, entirely suitable for registering motor unit activity, the spikes being usually of 5 to 10 milliseconds in duration.

In muscles showing such evidence of improving function as an increase in electrical excitability and in strength there were spontaneous electrical discharges which persisted at least as long as one and a half years. As this same type of electrical activity is also found in muscles supplied by regenerating peripheral nerves following suture, it seems reasonable to conclude that the discharges from the muscles in poliomyelitis are manifestations of a regenerative process. When present in the acute stage it may, of course, represent the occurrence of degeneration rather than regeneration. The pattern of electrical discharges differs, however, in regard to frequency and voltage from that seen in progressive muscular atrophy, presumably an entirely degenerative disease. In the latter disease increased electrical activity is usually associated with loss of power and atrophy, whereas in poliomyelitis it has been correlated with clinical improvement, the discharges disappearing when this ceased. These discharges may depend on the presence of a combination of functioning and nonfunctioning fibers in a muscle, with a resultant hyperirritability on some chemical basis such as sensitivity to acetylcholine, or they may represent motor neuron activity. Further experiments, such as peripheral nerve blocks, might throw more light on this point. In any case the conclusion seems warranted that this electrical evidence of hyperirritability is not correlated with clinical signs of muscle "spasm" and is probably an indication of neuromuscular regeneration.

The term muscle "spasm" is inadequate to describe the abnormalities revealed by electromyography and may even be misleading. Instead of a single condition, we find that three types of abnormality are observable. The first is hyperirritability of the affected muscles to stretching as indicated objectively by electrical discharges and subjectively by pain during the acute stage of the disease. This may be a nonspecific reflex tension initiated by a painful stimulus. The cause of the pain is obscure. The hyperirritability may be due to invasion by the virus of the posterior roots, meninges or peripheral nerves and muscles.

Secondly, during the period of improving motor function muscle irritability, as evidenced by spontaneous discharges, is not correlated clinically with pain, tenderness or shortening but with weakness and with electrical indication of regeneration.

Thirdly, the shortening or contracture of muscles, which may persist for months or years after the onset, is not associated with hyperirritability electrically and may be due to changes intrinsic to the muscle rather than to spinal cord disease.

The term "mental alienation" seems unnecessary, for weakness or actual paralysis of muscles is probably due to specific lesions in the anterior horn cells. Loss of volitional control of muscles does occur without such anatomic lesions, particularly after immobilization as for fractures, and in association with painful movements. In our cases of poliomyelitis, however, weakness was always accompanied by objective signs of neuromuscular disease such as loss of electrical excitability or abnormal electromyograms. Whenever there was imbalance about a joint, such as results in an equinus or calcaneus deformity, we have observed a corresponding imbalance of involvement, the weaker muscle showing the greater electrical abnormalities. If paralyses unrelated to the cord lesion occur in poliomyelitis they would seem, therefore, to result from treatment such as immobilization, or from failure to relieve pain, rather than from "alienation" or some other speculative neuromuscular dysfunction specific to the disease process.

We have found objective evidence, however, of "incoordination" in poliomyelitis. The simultaneous activation of protagonists and antagonists was a striking feature of our electrical recordings. This does not necessarily prove an abnormality of the nervous system as it is well recognized that individuals with weak muscles from any cause may contract all the muscles together in attempting movements beyond their strength. This is common clinical experience in the muscles of an

extremity immobilized for treatment of a simple fracture. In our cases, however, the attempted movements were only minimal and specific muscle reeducation had been given to eliminate, if possible, the simultaneous contraction of opposing muscles. Furthermore, those movements were painless. The actual synchrony of individual spikes in opposing muscles both at rest and during motion is a most unusual finding. This cannot be produced in normal muscles by voluntary attempts and indicates striking disorganization of the neuromuscular mechanism. The fact that this synchrony of muscle discharges was observed also during regeneration of peripheral nerves after injury leads us to believe that it is a phenomenon associated with a regenerative process. It is known that peripheral nerves do not function entirely normally after regeneration if the lesion has been severe enough to cause wallerian degeneration.[9] For example, in many cases of facial paralysis of the common Bell's type coordinated individual muscle action is never regained and the muscles of the eye and mouth consequently function simultaneously with all voluntary movements. The so-called "incoordination" in patients with poliomyelitis may also be an example of abnormal function following regeneration. Although these studies do not rule out involvement of higher levels in the central nervous system, all the results obtained are explainable on a basis of a disordered peripheral neuromuscular mechanism.

SUMMARY

1. In poliomyelitis the term "muscle spasm" is inadequate to describe the complexity of dysfunction which is revealed by electromyography.

2. In the acute stage, only muscles with some degree of paralysis discharge electrical potentials at rest; these electrical abnormalities are not correlated with the presence of clinical "spasm."

3. Partially paralyzed muscles are hyperirritable to passive stretching, as indicated by electrical discharges and pain; the muscle tension thus developed appears to be a reflex protective mechanism.

4. The electrical activity in paretic muscles at rest increases during the period of improving motor power, and the pattern of discharges corresponds with that seen in muscles during regeneration of peripheral nerves. When improvement in motor power ceases, spontaneous electrical discharges disappear.

5. No abnormal electrical activity is associated with the muscle contractures of the late stage of poliomyelitis, nor are any discharges present in completely paralyzed muscles.

6. The concept of "mental alienation" does not contribute to the explanation of paresis in our cases, since objective signs of a disease process were always present in the paretic antagonists of muscles in "spasm."

7. Increase of voltage of action potentials during successive ergographic tests is an index of recovery of motor power.

8. Of the three concepts of Kenny, the only one upheld by our objective measurements is that of "incoordination," although the term is misleading. We demonstrated not only simultaneous activation of protagonists and antagonists but also intermittent synchrony of individual discharges from opposing muscles, such as is found in peripheral nerve injuries during regeneration of axons. Disordered reciprocal innervation seems to be a more descriptive term for this type of dysfunction.

9. Sanders, F. K.: Repair of Large Gaps in Peripheral Nerves, Brain 65: 281-337 (Sept.) 1942.

NEW ASPECTS OF MALARIA

LIEUTENANT COMMANDER DAVID R. TALBOT (MC), U.S.N.R.

On the return of millions of service men from tropical duty to civilian life at the end of the war it is going to become necessary for every physician to have a working knowledge of malaria and other tropical diseases. This knowledge must include certain new aspects of the nature of malaria and its treatment that have been brought out during this war. The fact that large groups of men have been under military control while being treated for malaria has made it possible to study this disease in an unusual way, by means of routine blood examinations, hospitalization and a more thorough follow-up of patients than would be possible in civilian life.

The material for a comparative study of two different theories of antimalarial tactics was furnished to me while I was doing duty as senior medical officer at an outlying military base, which for obvious reasons I cannot name, nor can I give the exact numbers of men included in these observations. The important fact is that two similar groups of men under identical conditions of living and exposure to malarial infection were handled according to two different accepted methods of malaria control. The one, the Army group, took atabrine (0.15 Gm. twice daily) prophylactically on two days of each week, while the second, the Navy group, were being given treatment only as they showed symptoms or had blood smears positive for malaria. This region was one in which there had been a high incidence of malaria for a long time, and the obstacles here to the ordinary methods of malaria control were seemingly insurmountable. There were miles of adjacent swampland that could not be drained, and the dense jungle growth made it impossible to penetrate this area for oiling or other methods of preventing mosquito breeding.

There was also a large group of native people living adjacent to the military reservation, 95 per cent of whose blood smears revealed malarial infection. While effectual mosquito control measures were carried out on the actual base site, millions of mosquitoes came from the swamp areas and became infected with malarial parasites from the native population; then, in spite of bed nets and good screening, they infected our military personnel while the latter was engaged in necessary night duties. At this time it was decided to do routine blood smears on all of our personnel, regardless of presence or absence of symptoms of malaria. We made thick smears, using the Giemsa staining method in all cases. This method in the hands of trained personnel is time saving and according to Capt. Paul W. Wilson, U. S. Navy, it is thirty times as easy to find the parasite in a thick smear as in a thin one. It is also important to take smears on two successive days, as in Plasmodium falciparum infections no forms may be found loose in the blood stream on the day that the parasite is dividing. We were astonished to find that 66 per cent of the Navy personnel had malarial findings (35 per cent benign tertian and 65 per cent malignant tertian), while 48 per cent of the Army group likewise had positive findings (the malignant tertian also predominated in this group). Now, in the past there had been a rather high

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incidence of frank, easily diagnosed malaria in the Navy personnel, while in the Army group the incidence had been quite low under a regimen of prophylactic treatment with atabrine; but when the infection did occur in the Army it was much more severe and was slower to respond to treatment than the infection in the group that had not been receiving antimalarial prophylaxis. The only 2 persons who presented cerebral malaria with coma were in this group. The coma was the first symptom except for slight headaches in both. They were desperately ill men, showing cyanosis, temperatures exceeding 104 F., rapid, irregular pulse and rapid respiration along with their unconsciousness. Intravenous therapy was given these patients and fortunately both reacted favorably. This convinced us that the prophylactic treatment was masking symptoms while the infecting plasmodia were insidiously doing damage to the infected man's blood-forming organs, so that when the malarial infection did break out the body's natural defensive mechanisms were so impaired that a more serious type of disease than usual resulted. We subsequently gave all Army men showing a positive slide intensive quinine treatment for four weeks. This routine kept almost all of this group from having clinical malaria. In the Navy men having positive malarial blood smears we instituted routine quinine and atabrine treatment. In most cases this prevented the development of clinical malaria, but in an occasional one the quinine would have a provocative effect and precipitate an attack of chills and fever. We used plasmochin in an occasional case of resistant malaria on the theory then advocated that it destroys the sexual forms of the parasite which are ordinarily responsible for recurrences. However, latest reports from Australia, where plasmochin was much used, refute this claim, and although some feel that it has a use in the treatment of a case of stubborn infection showing repeated recurrences, other authorities feel that it is so toxic that it should never be used. However, if it is used, signs of toxicity should be carefully watched for, such as nausea, abdominal pain, cyanosis, methemoglobinuria, toxic nephritis with albumin, presence of red cells and casts in the urine, edema of the ankles and cardiac disturbances. If any of these symptoms appear to an appreciable extent, the drug therapy should be discontinued and the patient hospitalized. In spite of all treatment there will be some recurrences, especially of infection with Plasmodium vivax. We found an occasional case in which atabrine seemed to be ineffective against malaria. In these cases quinine had been given for a week in the treatment of an acute attack, then atabrine had been given for as long as four or five days when the patient would develop high fever and chills, which would subside when quinine was administered again. There were also a few cases in which quinine likewise seemed ineffectual while atabrine yielded good results.

In comparing the action of these two drugs a few facts must be kept in mind: Quinine acts at once, due to quick absorption; atabrine acts slower, due to slow absorption. Because of this it is sometimes recommended that atabrine 0.1 Gm. three times a day after meals for a week be given along with quinine 0.6 Gm. three times a day after meals for the first three days of treatment only or that atabrine be given as described for a week, with the addition of 0.2 Gm. of atabrine intramuscularly twice on the first day of treatment, thus getting a high concentration of atabrine in the blood at once. If there is nausea, stupor or coma, parenteral medication is necessary. In this connection it is well to remember never to give atabrine intravenously or quinine subcutaneously.

Intramuscularly one gives atabrine dihydrochloride 0.2 Gm. or quinine dihydrochloride 0.6 to 1.0 Gm. in 5 to 10 cc. of isotonic solution of sodium chloride. In both instances the drug is to be given in alternate buttocks every eight hours until the patient can take medication by mouth. Intravenously one gives quinine dihydrochloride 0.3 Gm. to 0.6 Gm., taking thirty minutes to inject it in 100 to 200 cc. of water, and repeats the dosage in eight hours if needed. This procedure should be reserved for very serious malarial infection, as it may cause a fall in blood pressure, syncope or even death. Antidotes are caffeine and sodium benzoate, theophylline ethylenediamine or nikethamide.

Lumbar puncture and drainage are indicated when there is increased intracranial pressure, as in cerebral malaria.

Of the 66 per cent of the Navy group with positive malarial findings the majority did not show any sign of acute illness. Some were men who had had malaria recently but had received inadequate treatment. Some had vague symptoms such as headaches, backaches and dizziness, this group being composed of those whose infection was in the incubation period, about to develop as a clinical type of malaria. There remained a few who insisted that they felt perfectly well. Now I feel sure that out of this group, if we had not given them treatment, there would have developed a few of those atypical cases which often go undiagnosed because they are never characterized by chills or fever or any textbook course of malaria. Instead, the infection shows up with bizarre symptoms simulating, like syphilis, almost every known disease of the body. A study of these men with routine monthly blood smears, together with a study of malarial patients in an outpatient department in which as many as 1,285 patients with malaria among the natives were treated in one month, convinced us that malaria was a much more complicated disease and had many more aspects than we had ever been taught to believe by the regular textbook portrayal of it. We especially had to give up the idea that chills and periodic fevers were constant symptoms of malaria.

To understand the symptoms better one should review briefly the pathology of malaria. Malaria causes destruction of red blood cells. There is selective localization of the parasites in the spleen, the liver and the bone marrow, with cloudy swelling, fatty degeneration or even infarction and local necrosis resulting in these parts. There is, in addition, an invasion of the endothelial cells of the blood vascular system of any part of the body. Again, localization of the malarial process may be due principally to the accumulation of large numbers of the parasites in the capillaries; these are sometimes referred to as embolic occlusions. The occlusions may lead to hemorrhage in a ring form and to destruction of adjacent cells and the tissues in the organs involved, such as the brain, meninges, heart, gastrointestinal tract, kidneys, pancreas, thyroid, lungs and adrenals. It is held by some authorities that this later process occurs with P. falciparum only.

Malaria also frequently causes the occurrence of a positive Wassermann or Kahn reaction in percentages ranging as high as 80 (Taussig and Orgel). Other tropical diseases that have a like effect are yaws, leprosy, trypanosomiasis and relapsing fever. It is important to

remember that these reactions are not true antigen-antibody reactions (for syphilis) but rather that they result from the presence of a lipoidophilic substance which has the property of linking complement to the lipoidal antigen. If this is not kept in mind, grave mistakes will undoubtedly occur, wrongly influencing the diagnosis and treatment of malaria. In our experience the Kahn reaction would be positive frequently thirty days after blood smears of a treated patient were negative for malaria. We have no reliable information on just how long the positive Kahn reaction persists after the malaria is cured.

With these observations in mind it will be easy to understand why the following atypical cases of malaria could occur. Most of the patients with atypical malaria never gave a typical history of chills and fever. Yet every one of them had a blood smear positive for malaria and showed a favorable response to antimalarial drugs.

TWELVE GROUPS OF ATYPICAL CASES

1. In this group there were various manifestations of cerebral malaria. It simulated medical shock with its headache, fever and prostration, or sunstroke, heat exhaustion, acute alcoholism, acute mania or afebrile psychoses. The symptoms cleared up or great improvement was noted on antimalarial therapy.

2. In this large group of cases the only complaint was of visual disorder with headache, often of long duration. Some of the patients had typical axial neuritis, with clouding or dimness of vision, temporal or frontal headache and deep pain in the orbit which was made worse by pressure or movement. Under antimalarial treatment these patients usually improved, some with varying degrees of residual visual impairment. Some of the visual disorders were due to midbrain or cortical lesions from malaria.

3. Malaria may involve any other one of the cranial nerves, with appropriate symptoms. After the optic nerve the eighth nerve is the next in frequency of involvement, with resulting vertigo and deafness. A pure malarial basilar meningitis is sometimes seen and might cause any of these lesions.

4. Damage to the thyroid or the adrenal gland from malaria may result in appropriate symptoms of various degrees of intensity. Replacement therapy with the indicated glandular products may be helpful in starting convalescence in these cases.

5. Embolic occlusions of malarial causation in the wall of the upper part of the bronchial tree may cause severe attacks of asthma or a persistent cough, usually nonproductive, with negative findings in the chest on physical examination. These symptoms, which are often the only complaints, clear up quickly under antimalarial treatment.

6. Weakness, shortness of breath and a rapid pulse on exertion may be the only symptoms resulting from direct malarial cardiac damage, or there may be symptoms of damage to the vagus nerve.

7. Nausea and vomiting, especially in children, may be the only malarial symptom observed. This may be due to involvement of the central nervous system as in basilar meningitis, to pressure from an enlarged liver or spleen or to pancreatic involvement with deep seated pain.

8. Dysentery sometimes occurs as the first observed symptom. The patient with this complication of malaria shows intestinal mucosal capillaries filled with parasites. When this patient comes to autopsy the mucosa of the intestine is congested and dark red or has a mottled appearance as in catarrhal dysentery, while the contents may contain mucus and blood cells, and the epithelial cells may be necrotic, with secondary bacterial invasion also showing in the mucosa.

9. The first complaint may be of urinary frequency, which is due to involvement of the wall of the bladder, or of discoloration of the urine red, brown or black. These symptoms accompany various degrees of renal alterations due to malaria; or the first complaint may be of anuria, as in acute malarial nephritis or the terminal stage of blackwater fever.

10. Biliary malaria is first evidenced by slight jaundice, and the patient may show a remittent type of fever. This was a fairly frequent form in our experience and responded somewhat slower to quinine than other forms.

11. Pronounced pallor of the face with a bluish or yellowish tinge to the scleras may be the only evidence of malarial infection in persons who insist that they feel fine and are perfectly well but just have the "tropical pallor," though a thick smear shows numerous plasmodia in their red blood cells, as well as definite anemia.

12. There remains one group of cases which are put together only because of the common factor of inconsequential symptoms: cases in which vague neuralgia or pains in the muscles or joints or various untypical cutaneous eruptions occur as the only symptom; blood smears are positive and recovery occurs on quinine therapy.

This enumeration of groups of atypical cases of malaria is not complete, but it points out that the patient who has lived in a district where malaria is endemic should be considered as having malaria until this diagnosis is disproved.

CONCLUSIONS

1. In areas of endemic malaria it should be a monthly routine to examine thick smears of blood from all military personnel, two specimens being taken on successive days. All persons with smears containing malarial parasites, even those without symptoms, should be treated vigorously to forestall attacks.

2. In general, the policy of treating men for malaria only after they become infected is better than prophylactic treatment if adequate laboratory facilities are available. Certainly this rule holds in peacetime or at any base where military urgency does not require that a maximum number of men be kept in the field to fight. However, in an area of active combat, especially where malaria caused by P. falciparum is endemic, prophylactic antimalarial measures must be adopted.

3. Treatment of malaria with both quinine and atabrine (when both are available) is more effective in preventing recurrences than prolonged treatment with one of them. Plasmochin may be indicated in rare, specially selected cases of repeated occurrences.

4. As the result of some idiosyncrasy, an occasional person will be found whose malarial infection does not respond to atabrine or, again, to quinine. The treatment will then have to be given with the single effective drug.

5. The diagnosis and treatment of malaria will be wrongly influenced if a positive Wassermann or Kahn reaction is considered pathognomonic for syphilis.

6. Malaria, like syphilis, may simulate different diseases of every part of the body, and the absence of chills and fever should not rule out its occurrence in people who are living or have sometime in the past lived in the tropics or other areas of endemic malaria.

V 19

CONTACT, CONTACT-INFECTIVE AND INFECTIVE-ALLERGIC DERMATITIS OF THE HANDS

WITH SPECIAL REFERENCE TO RUBBER GLOVE DERMATITIS

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This somewhat cumbersome title covers the substance of a lecture to Army surgeons on infections of the hands (and feet) currently being given by one of us (J. H. S.) with the tabular analytic summaries for mnemonic purposes which accompany it. The presentation is based on material which aggregated 200 cases in the senior author's practice ten years ago and has grown recently out of all bounds in the direction of the physician's (and surgeon's) hand. Since, as Ecclesiasticus has well put it, for surgeons "the handiwork of their craft is their prayer," and since the same authority has said that in the physician's hands is the issue of life, it appears worth while to offer a critical analysis. Such a method of analysis is, in our experience, useful in industrial medical practice, now a major defense problem, as well as in the field, the household and the medical office and surgical clinic. Application of the principles tends to render refractory cases amenable, reduces the severity of initial and relapsing infections, may restore incapacitated persons to usefulness and may make surgical treatment for deep or extending infections unnecessary.

The scheduled title of this lecture, "Dermatophytosis," well illustrates the first problem—to get the medical man over the idea that a single causal agent, and a fungus acting alone at that, accounts for all or most dermatitic and especially vesicular and vesicopustular eruptions of the hands and feet. Having endured the blistering scorn of internists at our hesitancy in calling foot rashes, especially interdigital ones, "dermatophytosis" when to the medically experienced [sic] eye they are obviously "athlete's foot," we have become dogged in our insistence that the mycotic be invoked only when pathogenic fungi are demonstrable. All other rashes, hand or foot, and in fact the fungous ones too, are compound affairs, susceptible of being designated after adequate study by such titles as mycotic-pyogenic, mycotic or pyogenic-allergic (or both), contact-allergic or contact-infection-(mycotic or pyogenic) allergic lesions—the terminology being analytically expansible, like that of organic chemicals, to almost astronomical hyphenization and syllabicization (to coin still another word). The infecting organism or the exciting (perhaps contact) cause is the trigger puller for an often well camouflaged but heavily loaded gun, the patient himself, loaded with predisposing (and other exciting) causes. To tamper with the trigger even by a patch test may lead to the usual effects of overlooking the (loaded) gun. The background of a contact or infective dermatitis of hand or foot, while not so immediately important as the foreground, may contain the explanations, unattended to, for chronicity, relapse, uncontrollable extension and noncure.

Table 1 emphasizes the two groups of causes which should be looked for in any painstaking study of a case. Running comment is offered as follows: The family history will usually expose evidence of general allergic tendency, which will usually be emphasized (though not always) in the patient. This does not mean atopy alone. Susceptibility to pyogenic and to much less degree to fungous infection also runs in families and sticks out in many of these personal histories like a sore thumb (acute ears, mastoids, osteomyelitis, styes, boils, impetigo, acne and so on). The interplay of infection and allergy must always be kept in mind—a severe infection, and a virus infection especially, tends to "broaden the allergic base"—increase the range and seriousness of contact, ingestant and inhalant allergy (i. e. sensitizes the individual). This is repeatedly observed in the flares of hands following sinus infections and, of course, in the development of wholly new contact and other sensitivity, occupational and otherwise, following focal and intercurrent infection. In many cases with allergic backgrounds one witnesses the sudden extension of eruptive manifestations, locally or over the body generally, or to special regions (the ears and center face, the flexures, especially axillary and anteculbital). These extensions are spoken of dermatologically as "ids" (phytids, mycotids, bacterids, pyids) as an expression of the extending, broadening or heightening allergic susceptibility of the individual to his infecting agent. In fact, paradoxically, some eruptions on the hands begin on the feet and, because the organisms have been difficult or impossible to find, have been designated as "allergic secondaries" or "ids." Better methods are tending especially in pyogenic allergic cases to show that organisms, usually hemolytic staphylococci or streptococci, are present in the miliary pustules of these "ids," though by original definition an "id" was supposed to be a toxic affair, the organisms absent. One must constantly think, then, in eruptions of the hands, of infection allergy as well as of general and contact allergy and their concomitants and consequences, local and systemic.

The ichthyotic and seborrheic constitutional trends in skin behavior, varying with heredity and with such elements as age and diet, are critically important. The parchment palmed, horny kneed and elbowed person cannot use soap. Alkali prepares him for local allergic reaction. The seborrheic cannot guzzle sweets. The explosive extensive "ids" are commoner perhaps in the seborrheic, the refractory localized (contact) eruptions in the ichthyotic. Constitutional trend underlies a large group of industrial and professional skin difficulties of infective, contact-infective, contact-allergic, infective and infection-allergic types.

Items 7 and 8 under "Predisposing Causes" represent newer conceptions of skin physiology of importance in the behavior of infections. The hands and feet are played on incessantly even in normal persons by vasomotor and sweat impulses—they blush and pale, are moist and dry, influenced by thought, emotion, posture and activity—and these effects are exaggerated in the abnormal to produce the red, hot or the blue, cold, the dry or the clammy extremity with its changes in blood borne pabulum, p_H, reducing body content of sweat and outright vascular stasis and interstitial edema. If one is looking for offhand illustrative material for this lecture, let him call forward from the audience the pink eared, moist and red handed members. The skin

hydration mechanism has an unfamiliar literature and much to investigate, but we are impressed with its importance and the usefulness of dehydrative devices in treatment. Especially is it worth while to stress, as the cause of many failures, subthreshold local edema of foot and leg, associated with "blue foot" and with mild cases of varicosity, recognizable only as the patient compresses the return circulation by sitting with the legs dependent over a sharp edge such as a chair or a table. In such cases compression bandaging for a time, and in some cases a light elastic stocking, often do away with the persistence or relapsing tendency of the foot and ankle eruptions. Contrast bathing (hot-cold) is often helpful too; and incidental and occasional elevation, which may even aggregate several hours a day (feet on desk). Of the remaining predisposing causes, heat and humidity are the gift of the weather, though sometimes of clothing and occupation.

Emotion expresses itself on the hands in much the same way that the rosacea complex is expressed by the flush area of the face. It is fascinating to watch the color play from relative pallor to lividity of the dermatitic hand, prepared by overwork, strain and fatigue and to see the itch begin and the scratch follow, with wringings and twistings, as the patient, all unconscious of what his members are doing, unburdens his mind and heart with bitten lip and suffused eye. "The hand cries for you" we say—and in none more bitterly than the poker faced but harried physician and the driven surgeon. Histamine bodies we mention with hesitation as theory to explain vasodilatational effects with hypotension and carbohydrate intolerance possibly due to absorption of histamine bodies from the intestinal tract (Kendall syndrome). Alcohol we mention too with hesitation because we respect what contributes to conviviality these days—but we cannot escape the conviction that staphylococci like it too (carbohydrate-like) and it does flood the skin with blood (vasodilatation and congestion).

Passing now to the exciting causes, on clinical grounds we believe that the original mycotic invader in some of these hands and feet simply prepares the way, as in the Ravaut-Rabeau conceptions of inguinal (flexural) streptomycoses, and is soon lost sight of in a burst of symptoms due to a secondarily invading pyogen. This may be a streptococcus producing lymphangitis and lymphadenitis, fever and so on and erysipelas-like extension of the original lesion. Far more often, however, in our American experience it is a hemolytic staphylococcus, recoverable by both aerobic and anaerobic methods, more abundantly sometimes by the latter. We accept the pathogenicity of this hemolytic staphylococcus and would point out that it is present in the most varied types of acute, subacute and chronic dermatitis without necessarily any conventional "impetiginous" characteristics. The clinical earmark is the miliary pustule usually at the periphery of a young lesion, often only just seeable with a 3 to 5 diameter lens. If the patient has become allergic to this organism he may sustain extensive "id"-like outbreaks involving elbow flexures, axillas, face, ears, with fever and more rarely lymphangitis. The last trace of fungus, if ever present, has vanished in the mêlée, so far as scrapings and culture show.

Across the mild or severe allergy of infection presented by these patients play the other allergens of their allergic pattern. Bacon explodes a urologist. Coffee as an allergen, overlooked for years, leads when removed after identification to a 75 per cent reduction in symptoms. House dust is a common offender in women (dishwater in France). Soap as an alkalizer prepares the skin for contact allergens of all sorts. Light

TABLE 1.—*Causal Analysis; Skin Infections (Dermatitis) of the Hands and Feet (Mycotic, Mycotic-Pyogenic, Mycotic-Pyogenic-Allergic Dermatitis)*

PREDISPOSING CAUSES	EXCITING CAUSES (Original and Flares)
1. Allergic family background.	1. Inoculation and reinoculation with infective agent. (a) Fungus and pyogen relationships. (b) Environmental and contact exposure.
2. Familial infection susceptibility (allergy of infection?) especially pyogenic.	2. Development of (a) local or (b) general allergy of infection (phytids and bacterids).
3. Personal allergy and pyogen susceptibility. Allergy and infection interrelations. "Broadening the base."	3. Ingestion of an allergen (food).
4. The ichthyotic or dry skin habitus. Predisposed by use of soap and other alkali contacts, because of lack of fat (oil) defense.	4. Ingestion of a drug (barbiturates).
5. The seborrheic or oily skin habitus. Predisposed by fat gland overactivity and congestion to phytids and bacterids, and to both fungous and pyogenic infections direct.	5. Common contacts (contact allergens). (a) Alkali sensitiveness—soap, etc. (especially in ichthyosis). (b) Rubber—gloves, occupational contacts with chemical catalyzers, etc. (c) Leathers and glove and shoe processing materials. (d) Medicaments and medical contacts, procaine, etc., disinfectants, dusting powders, etc. (e) Wool. (f) House and occupational dusts, oils, cleansers, etc. (g) Plants (oleoresins, etc.). (h) Miscellaneous chemicals. (i) Physical agents—light, heat.
6. Vasomotor and sweat mechanism, functional disturbances. (a) Hyperhidrosis (b) Red or blue cold hands—"neurocirculatory instability" (Becker). (c) pH and reducing body content of sweat. (d) Contact of skin surfaces. Effect on concentration of oxygen, etc.	6. Emotional shock and crisis.
7. Causes of skin hydration. (a) High carbohydrate intake. (b) Alcohol intake. (c) High alkaline ash food intake, especially fruits. (d) Causes of edema. (1) Varicosities and peripheral stasis (small amount). (2) Serum protein-globulin reversal. (3) Heart and kidney disease. (e) Diabetes.	7. Intercurrent infections. Especially virus infections of nasorespiratory and gastrointestinal tracts (sinuses, etc., mild, subthreshold infections, time of onset, duration?).
8. Causes of vasodilatation. (a) Heat and humidity. (b) Emotion. (c) Histamine. (d) Fatigue. (e) Allergens. (f) Alcohol.	
9. Causes of vasoconstriction. (a) Arterial disease. (b) Vascular spasm.	
10. Causes of sweating. (a) Nervous, emotional tension. (b) Atmospheric conditions—heat, humidity. (c) Impervious clothing, including shoes and gloves.	

sensitiveness follows a bout of intestinal "flu" (coproporphyrin absorption?) and on the "trauma" inflicted by the allergen appears the hemolytic staphylococcus. This does not mean that all contact irritation transforms itself forthwith into infection and infection allergy, but it should be looked for. Twenty minutes of the wrong rubber glove may mean three to six weeks in bed.

Environmental exposure for physicians may include outbursts following the opening of a boil or abscess with unprotected hands quite as much as stepping on a dirty bath mat or locker room floor with unprotected feet. Our observations on the effect of barbiturates (item 4) are based largely on the homology of the bullous type of this drug eruption to the acute infective dermatitic hand. Many physicians with bad hands have been fighting tension with sedatives of this type, but the frequency may be merely coincidental.

The contact factor's name may of course be legion. Only the commoner groups of contact allergens are named in table 1. The case histories later presented are those of physicians and emphasize the rubber glove, and particularly the so-called latex glove, as the trigger. Suture tube fluids, local anesthetics of the "caine" types are frequent offenders. The morphology of the glove eruption finally arouses suspicion, though it may be years before the conviction dawns on the victim—a dusky, often livid and "burned" look to the dermatitis, most apparent on the back of the hand, with a cuff encircling the wrist, almost suggestive of pellagra or photodermatitis. At first irritation may be slight and cumulative, but as the allergic response is stepped up the itching begins in fifteen minutes, the dermatitic disability may last for six weeks following a single contact (case 3) (background causes) and may be immediately converted into a violent hemolytic staphylococcus or streptococcus infection without preliminaries that can be recognized. Rubber is, of course, a chemical goulash of synthetics, gum, accelerators, vulcanizers, antioxidants, any one of which, or several, may be allergens or become such for susceptible (backgrounded) persons. The composition of rubber changes constantly with new discoveries; the ingredients are often secret; extremely minute amounts may be profoundly allergenic or irritant. There is a story that one handbarrow load of old shoe heels containing hexamethylene, added to a batch of new materials, brought down the staff of a plant with a dermatitis. Certainly one pair of gloves worn for one operation can do it for the surgeon who is susceptible.

When a contact dermatitis is suspected, patch test search of all possible ingredients may be resorted to, though close questioning and the distribution of the dermatitis provide good clues. Patch tests especially to high concentrations of the types of substances named may produce violent local reaction at the test site and even extensive "id" manifestations, so that patch testing with them is not without risk. When the surgeon begins to suspect his gloves he should try wearing a very thin silk or cotton glove under the rubber one. If this brings pronounced relief, American Anode Inc., Akron, Ohio, will supply a patch test kit and will, moreover, make gloves to order, excluding therefrom the incriminated agent. A dermatologist or allergist should do the testing. A piece of the offending glove should also be used. When the glove is definitely incriminated one or other of two (relatively) non-allergic types may be tried—Neoprene gloves made from the du Pont synthetic by the Pioneer Rubber Company, Willard, Ohio, or the dark glove made by the Seamless Rubber Company, New Haven, Conn. Every person responsible for gloves on the operating and supply room staff should be put on the alert, for a single mistake may cause a sensitive surgeon prolonged discomfort and incapacity. Thus far no satisfactory method for desensitization to these highly toxic substances has been worked out, and avoidance, with correction of the background, is the only resource.

Of other contact excitants mentioned, wool brings in a good many women's hands these days through Red Cross knitting activities. The sensitiveness may be inferred by flares after avoidance, but wool is so general a contact in clothing that it is best tested for specifically by patch with the ether and alcohol soluble extracts. Leather, like rubber, is a goulash of processing materials and shoes must be dissected and glove linings examined and the patch materials must be applied so as to test both sides, to detect reactions to glaze, glue and rubber cement. We recall one young patient whose feet finally recovered when she was provided with rubber cementless shoes, and her hands, when she stopped turning handsprings under the lilac bushes (proved allergy to lilac).

The importance of soap in hand dermatitis concerns both its alkalizing qualities and its content of specific allergens. Of the two, the former is the more important. The action is a double or treble one, including removal of the oil or fat defense by emulsification; elevation of the surface p_H, thus attacking the defensive "acid mantle," and the creation, as Burckhardt has shown, of a local allergen susceptibility. The influence of alkalization varies from person to person, some individuals being apparently constitutionally deficient in skin alkali neutralizing capacity. Because of this complex of considerations, the avoidance of soap and of alkali in housework and industrial processes is often of critical importance in preventing eruptions of the hands, and nothing can be accomplished if the patient will not accept the use of a detergent cream containing a wetting agent, for cleansing, and use it invariably, not just occasionally. If defatting (as in ichthyotic or xerodermic persons) is the principal trouble, some tolerance of soap can be secured if the hands are insistently and persistently and repeatedly inunicted between washings with a bland nonperfumed grease (simple lick-and-a-promise rubbing won't do) to which the patient must not be sensitive (cholesterinized petrolatum is effective). Rubbing in such a grease just before washing, as the industries have found, or even before beginning dirty work, helps. Even the draining of soapy water over the feet in a shower affects some persons unfavorably and the spigot-heel-suspension posture in the bath tub must be adopted.

Light sensitiveness is rarely if ever an affair of the hands alone, but in extensive "id" cases, especially with involvement of the face, it must be suspected. It develops in patients who concomitantly may have a coproporphyrinemia the apparent source of which is a porphyrin-producing stool flora. Just what starts this flora in the intestine is not known, but we have seen light sensitiveness of the hands follow virus infections (nasorespiratory and gastrointestinal) and suspected that their apparent ability to excite it depends on their paving of the way for other pathogens. Improvement

can be brought about by hastening the elimination of the circulating porphyrins with oral administration of nicotinamide.

The influence of nasorespiratory infections on hemolytic staphylococcus infections of hands is recognizable by patients as well as ourselves. It is apparently an induction of infection allergy to judge by the provocation of extensive "ids" in some cases and "allergy" to the staphylococcus rather than the viruses. Apparently the sensitization interval is from eight to thirteen days, but since patients may become subthreshold clinical cases before symptoms appear, the general symptoms may become outspoken only about the time the skin flare begins. A spreading erythema, increased edema, a shower of pustules locally, extension without change in morphology, local lymphangitis and lymphadenitis, sudden involvement of the predisposed flush areas (ears, center face), flexures (intertrigo) or a wholesale outbreak of a follicular papular, patchy or diffusely confluent dermatitis, each or severally, constitutes the flare. A truly magnificent outburst of pustules from head to foot or a pemphigoid bullous eruption with fever have more recently marked the extreme grades of sensitization and require oral sulfonamide therapy. A drug rash may be diagnosed. It is in these cases that we suspect the barbiturates with which the patient or physician is crutching himself to be contributory, by a Milian type of provocative reaction.

THE TREATMENT OF HAND AND FOOT DERMATITIS

While some cases of hand or foot dermatitis are refractory and even incurable, most persons not already burned by x-rays, or hampered by the accumulated irreversible pathogenic processes of later life, make gradual recoveries. Failures are usually due either to (*a*) a one-track view of the case, diagnostically or therapeutically, (*b*) nonadherence by the patient to a tedious and exacting regimen or (3) nonattention by physician or patient to detail. Since the last mentioned involves instruction which, we have learned, must be full and specific, the minimal directions and information given the patient in the senior author's office are here reproduced (table 2).

Table 3 arranges treatment under the three categories suggested by the analysis of causes. In military life, especially of Americans in the tropics, and among workers in the industries, much trouble can be avoided if selection of personnel can be exercised.

TABLE 2.—*Directions for the Patient; Causes and Prevention of and Treatment Directions for Ringworm or Fungous Infections of Hands, Feet and Groins*

1. So-called "ringworm," "athlete's foot," "gym itch," etc., is due to a fungus or microscopic plant, midway between a yeast and a mold, very tough and hard to kill.
2. Other germs may take advantage of the situation and complicate a fungous infection with serious effects.
3. No one who knows what he is about promises to "cure" permanently fungous infections of the feet. They can be cured or improved, but the elements of susceptibility and reinfection make it impossible to say whether or not and how soon any given case may be cured.
4. Your cooperation is as important as our treatment—more important in the long run. You must keep yourself well.
5. The infection is rarely dangerous, but it may be, especially in later life and in sensitive persons. It comes and goes, has ups and downs in the same person, is helped by a vast number of remedies.
6. The infection is made worse, among other things, by:
   (a) Moisture, sweating, heat (hot weather and exercise, hot sand, hot, impervious or sweaty shoes, wool socks, carelessness in drying the feet, especially between the toes).
   (b) A diet very high in starch and sugar (sweets including fruit juices, ice cream and soft drinks).
   (c) The use of alcoholic beverages.
   (d) Nervous tension, stress and strain, from any cause, including fatigue and nervous overwork.
   (e) A special susceptibility or sensitiveness to the germ (allergy) in certain people.
7. The common sources of infection are:
   (a) Moist surfaces used by many bare feet—bath mats and floors, showers, swimming pools and gymnasiums, bath houses, toilet seats.
   (b) Walking barefooted anywhere.
   (c) Your own wool and silk socks, old slippers and shoes.
   (d) More rarely, other people's bodies and clothes.
8. Apart from the precaution of not walking barefoot or exchanging towels, clothes, footwear, there is little likelihood of passing on the disease. All susceptibles got it from the aforementioned sources (7).
9. The general principles of control and prevention are:
   (a) Break yourself completely of the barefoot habit. Never touch a bare foot to the floor, carpet or mat.
   (b) Dry and cleanse your feet completely every day, removing all scale and moisture, especially between the toes. Do not overuse soap.
   (c) Use cheap straw, paper or wooden clog slippers and burn frequently.
   (d) Wear cotton socks and boil them after each day's wear when infection is active. Avoid wool socks at all times.
   (e) Avoid sweaty shoes and hot footwork.
   (f) Exchange no clothing with any one.
   (g) Never scratch, rub, pick, pull or tear. If instructed, use scissors, sandpaper, towel and toilet paper.
   (h) Do not use iodine without medical order.
10. To prepare purple solution (potassium permanganate):
   (a) Remember the solution must be made fresh each time. If it turns brown or muddy while in use, mix some fresh.
   (b) Potassium permanganate requires a prescription. Use the number of tablets per quart of warm water called for by the prescription. If using crystals, make the solution the color of beet water, so that you can still see a mark on the bottom of the dish.
   (c) The solution stains finger and toe nails brown but the color can be removed with lemon juice or oxalic acid (poison!). Basins and tubs can be cleansed with cleanser. Acid spoils the enamel.
   (d) In soaking hands or feet, use an enamel basin deep enough to immerse to ankle or wrist. Save time by standing in the basin while shaving. Soak for —— minutes (usually 10-20).
   (e) For baths, use 3 tablespoons of a saturated solution to the tubful of warm water. Clean tub at once after use.
   (f) After soak, rub the surface clean with old cloths or, better, paper towels or toilet paper wads. Rub off all the brown and dead skin possible.
   (g) For sponging surfaces, use gauze or a cotton and a rubber glove on hand.
11. Clipping and scraping directions.
   (a) Thoroughness determines success or failure at the start. Later it can be overdone, but few do it.
   (b) Use the blunt end of a new steel nail file, held vertically as a scraper. Do not tear or pull.
   (c) On dry scaling or thickened surfaces (not between toes), use emery boards (as purchased for finger nails) or 00 (double 0) sandpaper in 2 inch squares (hardware store). Do not grind to the point of soreness, bleeding or oozing. Use fresh sandpaper frequently.
   (d) Clip blisters with sharp manicure scissors used for no other purpose. Soak in alcohol before and after use. Stick one point into the blister top, clip and slit. Then reinsert the blade at one end of the slit, cut a second, turn back the V shaped flap and cut it off at the base. Have us show you. Be conscientious; open all small blisters this way.
   (e) Apply paints directly to the skin; ointments spread on gauze. Keep ointment soaked gauze between sore and sticky toes.
12. In acute cases, keep off the feet; sit with them elevated to a desk top or chair whenever possible.
13. Remove constricting articles of clothing such as garters and rolled stockings.
14. If using supporting bandages, note the following:
   (a) Change and wash elastic bandages every other day as directed with package.
   (b) With roll uppermost (away from skin) start with end on top of foot, just behind toes, roll smoothly with firm pressure (not too tight), overlapping each turn one half. Toes should not swell or prickle.
   (c) Cover the heel (demonstration).
   (d) Run bandage up to just below the knee.
   (e) Remove bandage after going to bed, put it on before rising.
   (f) Replace bandages that have lost their elasticity (at least every 30 days).
15. If you feel an attack coming, soak feet 20 minutes in purple solution, ice cold in summer, hot in winter.
   (a) Use the salicylic alcohol solution as directed.
   (b) Dust the powder between the toes 2-3 times a week.
   (c) Try a little ointment from your stock, preferably the yellow one.
   (d) Open the stray blisters as you have been taught.
   (e) Watch the skin between the 3d and 4th and 4th and 5th toes especially, and keep after it.
   (f) Carry out orders regarding diet, alcohol and nervous influences.
   (g) Don't be easily discouraged or alarmed. Try these directions first, then get medical advice before the relapse is complete, if you can't control it.
16. If you can interest a school board or club in preventing infection with "athlete's foot," and care to do so, ask for further information.

How can a surgeon prevent rubber glove dermatitis? First by not becoming a surgeon, if he classifies in column 1, class 1. Second, by heeding the instructions for the care of his feet. Third, by staying within bounds, and the more so the older he becomes, on alcohol, carbohydrates, sedation, rest and work. Fourth, by knowing what he uses and what he wears on his hands (and feet) and sticking to the least sensitizing and least irritating for him. Fifth, the allergically backgrounded individual should have his allergic pattern studied as early as possible, and again after severe infections, which "broaden his base." And finally, as any good surgeon does, he should avoid infections and infective material and not expose his bare hands to pyogens or his feet to fungi. Dashing wielders of the pocket bistoury, and inveterate golfers, take heed.

In the prophylaxis of foot infection, important for protection of the hands, item 2 in the preventive column should be made a lifelong habit; item 3 is prevention, not treatment; item 4 permits sterilization by boiling (change every day, boil, wash, rinse thoroughly); certain shoes provoke infections, possibly by allergen content or provoking perspiration or preventing evaporation. Item 6 is much overdone by most patients who soak and wash unnecessarily with soap under the mistaken impression (odor) that dirt and putrefaction are at the bottom of their troubles. In item 7, manual clean-up can be done with paper towels or toilet paper wound around the finger and "reamed" between the toes. In item 8, inunction of a grease is ineffectual without time (three to five minutes) and detail (between and under the toes).

Passing to the systemic therapy, the opening dose of hydrochloric acid requires no test meal if no history exists suggesting hyperchlorhydria or ulcer. The older the patient and the more flushed the face (rosacea complex) the larger the indicated dose (20 to 60 minims [1.25 to 3.7 cc.] three times a day) may be. Glutamic acid hydrochloride (one capsule equivalent to 10 minims [0.6 cc.] of diluted hydrochloric acid) is a very acceptable substitute for the bottle-dropper-tube nuisance. It is necessary to watch the weight and fatigability in reducing the intake of carbohydrate by younger persons, and fruit and juice guzzling as a source of carbohydrate as well as alkaline ash food in general must be checked.

Rest and psychotherapy, though treated by single words in the outline, are basic, inescapable essentials. One of the most important medicaments in the hand-foot armamentarium is DGAD—not digitalis, gonadotropes, aspirin and diaphoresis (of copper) but huge doses of Don't-Give-a-Damn, the psychologic soporific that reduces the eternal friction between what one feels he must do and what one thinks he can. As a guide to the finding and taking of this now increasingly scarce preparation, a four page written prescription impossible to reproduce here is handed out to the patient in the senior author's office and then hammered in by one to three or more talks on principles of living which it must be admitted are too deep or fly too high for many physicians and surgeons to grasp or apply them. They see the point, but the nub of the matter—to do something about their own tensionmindedness, their own overwork, their own disposition to violate rule 5

TABLE 3.—*Treatment of Skin Infections (Dermatitis) of the Hands and Feet*

PREVENTIVE	SYSTEMIC	LOCAL
1. Reject for hand and foot jobs the following: (a) Very greasy or very dry skinned persons. (b) Persons with red or bluish hands and feet. (c) Severely allergic persons. (d) Persons with heavily sweating hands and feet. (e) Highstrung nervous, red faced or flushing persons (f) Persons with varicosities, even minimal. (g) Persons with active fungous or pyogen infections at any site or a history of pronounced susceptibility. (h) Alcohol users (more than minimal). 2. Keep bare feet off floors and bath mats. 3. In locker and dressing rooms, enforce 1 per cent sodium hyposulfite solution foot trays. 4. Cotton socks, cool well fitting and climatically appropriate footwear. 5. Drying dusting powder (zinc oxide-boric acid-tannic acid āā) for sweating feet. 6. Less soap rather than more. 7. Occasional potassium permanganate soaks, 1:4,000 solution, and manual clean-up. 8. Aquaphor-cold cream āā for systematic greasing. 9. Salicylated alcohol rubs 2 per cent, for scaly feet.	1. Dehydrate by: (a) Acid ion increase (HCl by mouth, acid ash diet trend). (b) Reducing carbohydrate sharply pro tempore or permanently. (c) Stopping fruit, fruit juices, soft drinks; resumption curtailed. (d) Stopping alcohol. (e) Water and salt intake restricted. 2. Rest. 3. Psychotherapy. 4. Sulfonamides (sulfathiazole or sulfadiazine) by mouth only if symptoms are severe and use unavoidable, or if septic constitutional or metastatic involvement has occurred. 5. Deallergization— (a) Allergic study or basic nonallergic diet exclusions, desensitization against or avoidance of positives. (b) HCl and pepsin by mouth. (c) Acid-ash regimen. (d) Autohemotherapy. (e) Calcium, intramuscularly and by mouth. 6. Investigation of dextrose tolerance (2-3 hour test). Small doses of insulin, diet if indicated.	1. If acute: (a) Ruthless clean-up ("débridement") scraping away all detritus, clipping out all vesicle tops and dead skin. (b) Hot potassium permanganate soaks 1:4,000 solution, 10 minutes once or twice daily. (c) Sulfathiazole ointment (emulsion base SKF) 5 per cent, 2-4 times daily. Short course. Sensitization risks. (d) 0.5 to 2.0 per cent ammoniated mercury in boric acid ointment as alternate or successor to c. (e) Follow as process becomes chronic by Whitfield's 2 per cent salicylic acid, 4 per cent benzoic acid in petrolatum. (f) In small vesicular or eczematous types, use Castellani carbolfuchsin paint, beginning with dilution 1-3 with water, and increase strength. 2. If subacute: (scale appearing, vesicles disappearing) use soaks, ointments and paint as aforementioned. (a) Avoid soap; use detergent cream. (b) Grease with aquaphor-cold cream āā, or (c) A propionic acid lotion alone or in addition to foregoing, or (d) Crude coal tar paint (acetone-collodion base)* or (e) Tar distillate ointment, or a crude coal tar in a vanishing cream base. (f) Clean-up before or after potassium permanganate soaks or, if dry, using 60 sandpaper or emery boards. 3. If chronic—or if refractory to treatment, use foregoing measures plus— (a) Elevation. (b) Bandage support using cotton webbing (Ace or Lastex Tensor) 3 inch, 5 yard bandage, base of toes to knee. (c) X-rays, 35-70 roentgens, unfiltered, experts only, lest flares be produced or subject burned by repetition without control. (d) X-rays over lymphangitis or lymphadenopathy. (e) S-1 lamp (bulb-Hg-arc) repeated sunburnings. Do not use with x-rays. (f) Collodion splint to fissures.

* Crude coal tar paint: Acetone 2 cc., flexible collodion 4 cc., crude coal tar q. s. ad 30 cc.

("Don't take yourself too damn' serious") goes by default or negation. Barber and many other observers have recognized the vacation as treatment in this group of ailments, and we have seen a patient recover in two weeks from a yearlong siege as he sat riding (as passenger) on a touring oil truck with his feet planted over a hot motor (the worst possible posture and place). It is even necessary to teach some patients to stop eyeing and overtreating their hands and feet to discourage their tension fixation.

The sulfonamides (sulfathiazole for staphylococcic, sulfanilamide for overwhelmingly streptococcic cases) should be held in reserve for extreme acute cases only and not lavished about. Adequate blood levels, the usual checks on water intake, crystalluria, blood picture and gastrointestinal and febrile reaction should be maintained. If improvement is not manifest by the fifth day a draw impends, and by the eighth to tenth day the drug should be stopped. There is every need for continuing local and other systemic treatment coincidentally. Too short a course (one to two days) may induce severe relapse and sensitization with extensive "ids" and be even a contribution to a rare fatal result. Sulfathiazole may be used locally in an emulsion base in low percentages at the same time.

Study of the important general (not local contact) allergic background we tended at first to postpone until other modes of attack were failing, from a disposition to spare the patient the always regrettable necessity of mounting the allergic bandwagon. Of late, however, we have been proceeding promptly, when signs of extension ("id") or sudden acuteness develop, to clear the intestinal tract of allergens and infection with 1 to 2 ounces of castor oil (antiallergic action of ricinoleates) and then after a day on water and a day on milk to add one simple food each day, which, if no reaction in hand or foot ensues, will with successive additions form collectively in a reasonable time a basal nonallergic diet. Staphylococcic toxoid and housedust extract are serviceable desensitizing agents, singly or together. Hydrochloric acid and pepsin help the older gastrointestinal allergic patients and an acid ash dietary regimen also favorably influences the allergic picture. If important or even merely suspected food allergens are identified they should be excluded from six months to two years, regardless of allergists' disposition to minimize weak positives. In one milk-egg-wheat case, egg skin tests were negative (familial allergen or atopen), milk only faintly positive to lactalbumin and wheat negative, yet after seven years of fairly strict avoidance any two of them repeatedly taken will provide a fresh background for an outbreak. A virus infection will bring on a combined sensitiveness to nickel and pyogens and a pyogenic exacerbation will then occur at the site of nickel contacts (white gold glasses frame, wrist watch, filled case, truss button collar). Nickel plated instruments officiated as trigger pullers in one physician, nickel plated faucet handles in a cafeteria worker. Such cases illustrate the interplay of allergens and infections and the eventual importance of a full allergic study in the resistant case.

Autohemotherapy (10 cc. of patient's own whole blood) and calcium gluconate (10 cc. of a 10 per cent sterile solution) intramuscularly are standard, useful, little understood parts of a nonspecific desensitization technic, of value in cases developing "id" (generalized) eruptions from hand or feet foci. Two to eight weekly or semiweekly treatments may be given.

THE LOCAL TREATMENT

Too much emphasis cannot be placed on a positively brutal clean-up of lesions on hands and feet with curet and scissors, following prolonged potassium permanganate or boric acid solution soaks. The smallest scale or tag must be removed, the top clipped out of every visible vesicle—not simply a prick or slit (see directions to patient, table 2). Such work is laborious, time consuming and painful and hence not effectively done by hurried doctors and tender hearted nurses. The patient can be taught to curry his own hands and feet, with occasional débridements by the physician. We find this procedure successful when impervious, irritating, infection retaining salicylic acid plasters and ointments have failed.

The Castellani carbolfuchsin paint is more lastingly effective than the sulfonamide ointments and may be used in conjunction or alone. "Castellani" is a trick preparation requiring a well selected dye and subject to quick deterioration (turns bluish and precipitates) if exposed to light or organic matter (redipping a used applicator). It contains[1] both phenol and resorcinol, to which some patients are sensitive, and it has a flaming magenta color. All patients should first be patch tested to it in a dilution of 1 to 3 with tap water, and, if no irritation follows, the concentration can be increased in the course of ten days to full strength (once a day). Clean-up of the hand and foot surface must be as scrupulously continued in the vesicular stage as with other methods, but as vesicles disappear sandpaper (00) can be substituted for scissors and curet in cleaning the dry surface and each layer of paint laid over its predecessor. The transition to a crude coal tar paint (Castellani paint can be made up in collodion solution too), which is painted on and dried to a thick protective covering by tamping into it while still wet a nonallergic unscented borated talcum powder, is made as vesiculation and pustules disappear. One application lasts two to three days and chips off in dry flakes. For ichthyotic patients crude coal tar as a distillate, or used straight in a vanishing base, may finally be substituted.

The last agent to be invoked in the treatment of mycotic and pyogenic-allergic hand and foot infections, and not the first, as is all too generally the case, should be x-rays. The x-rays give at the start remarkable relief in a large proportion of cases, and a first series of four to six doses of 35 roentgens may in not too acute or allergic cases give such striking results that physician and patient, and particularly the physician as patient, think that, if a little is good, more's better. The doctors' stories all run the same—down the hall to his roentgenologist friend he goes—"Aw, Jack!" he pleads over his friend's protest that the limit is near (or passed) "Come on, I've got to operate tomorrow and look at me—they're giving me h—l" Another dose, recorded or unrecorded, is given. Thirty per cent of the run of resistant infections have been "burned" by the accumulated series of small doses. With the first to third dose in the most unexpected fashion an acute flare may also be provoked, with extensive "id" manifestations and a tedious recovery or lastingly increased sensitiveness. A second course of irradiation, even though the first gave good responses,

1. Castellani paint: An aqueous solution containing approximately 4.5 per cent phenol, 1 per cent boric acid, 4.5 per cent acetone, 9 per cent resorcinol and 9 per cent saturated alcoholic solution of basic fuchsin.

begins to encounter resistance or tolerance, and by the time the doctor's doctor sees them the hands are refractory if not burned. It is rare in our experience to see a lasting recovery follow roentgen irradiation. The surgeon who works under the fluoroscope is especially a candidate for irradiation trouble, for no one can ever estimate what his total dosage has been.

The best substitute for roentgen irradiation we have been able to find for "hand" cases is the nitrogen-mercury vapor tungsten electrode bulb designated as S_1 by manufacturers. The spectrum is said to approximate that of June sunlight, cut off by the glass at 2,800 angstroms. If no evidence of light sensitiveness exists, a sharp weekly exposure (ten to twenty minutes at 5 inches) has an excellent effect partly bactericidal, partly counterirritative, partly just plain "toughening." This technic is preferred to short, suberythema exposures at shorter intervals. The lamp must be used with caution on previously irradiated surfaces or where photosensitiveness may be suspected. Summer sunlight may have similar good effects. The short wavelength (quartz) ultraviolet lamps are in our experience more irritative, less effective.

The last useful device to be mentioned, one of us (J. H. S.) learned from the late William Allen Pusey, who used it to heal fissures of the lip. With or without a preliminary touch of Castellani paint, a patch of cotton roller bandage, the edges frayed to increase its hold on the skin, is pasted over the fissure by several applications of flexible collodion. Pain quickly disappears and the most refractory fissure usually heals in forty-eight hours, the patch detaching itself, renewable as occasion may require. Preliminary sandpapering of thickened keratotic skin reduces the likelihood of recurrence.

The touch of conviction, and the company that misery loves, will be carried to the individual physician who has himself known what a contact-infective process on the hands can mean for personal and professional life by the concrete case description. We accordingly close with three such summaries from many available. They are intended to support the conviction that disabled hands express bodily dysfunction preparing the way for or reenforcing specific insult. Only by the broad, in combination with the detailed, approach can cause, treatment and the best prognosis the circumstances warrant be alined on a sound foundation.

CASE 1.—A surgeon aged 64, under observation for seventeen years, well illustrates the place of rubber glove sensitiveness in a succession of dermatitic episodes involving the hands, for which the background has never been fully evaluated (too busy). It is probably the culmination of a gradual broadening of his allergic base with a succession of irritants, allergens, infections (intercurrent) and systematic overload on perhaps a pyogen susceptibility, congenital or acquired. High carbohydrate diet may be a contributing factor. He had never had a dermatophytosis of the feet but occasional slight irritation in the groins.

In 1925 he began to have scattered patches of dermatitis on the backs of the hands, cleared immediately by tar and minimal x-ray therapy.

In 1927 he recognized cheese and egg as factors and brought on flares with them.

In 1928 he had a severe and prolonged siege of boils (pyogen factor) hands up and down, improved by sun exposure. Kept quiescent by grease and tar until:

In 1930 contact sensitiveness to orris root was recognized. Feet and groins were clear. Also in this year good effect of reduction in carbohydrate intake was recognized.

In 1934 he sustained a general eruption over the trunk and extremities which in retrospect conformed to an id type. Wool sensitiveness was clearly recognized on this occasion. The feet and groins suggested mild dermatophytosis with dermatophytid. This cleared and:

In 1939, after five good years, his hands relapsed following a severe upper respiratory infection. Emotional and stress factor was also recognized by the patient. Typhoid in 1938 produced no flare of the hands. Rubber gloves were first suspected in this year, although a special soap received most of the blame. Diet, alkaline ash.

In 1940 after a period of improvement, a clearly recognizable flare was identified after using latex gloves at two hospitals. He had also confirmed egg and added shrimp to his ingestant allergens. A violent flare followed combination of a four-allergen food with cornstarch compresses and sudden severe nervous strain.

Within three months he had demonstrated for himself that a silk glove worn under the latex glove would protect his hands but that a cuff delineated dermatitis would follow contact of latex cuff with wrist if the silk glove was shorter, a striking effect, confirmed by a patch test, which produced a vesicular dermatitis lasting ten days.

He then discovered that Neoprene gloves and a glove manufactured by the Seamless Rubber Company, New Haven, produced no reaction, and arranged to use them exclusively.

It should be noted that during this period of extreme sensitiveness to latex he had a bad time with relapsing nasorespiratory and sinus infections, which may have been the base broadener (see 1939) which brought on the specific sensitiveness to some ingredient of the latex formula.

An allergic study was not completed. On account of the severe reactions to the rubber itself, it was felt inadvisable to risk general sensitization reaction by an attempt to identify the specific chemical allergenic ingredient with the American Anode kit.

In 1942, through error, the patient, who had been using Neoprene gloves without reaction for two years, was given a pair of latex gloves, which, used on the bare hands, produced in a single operation a dermatitis that took six weeks to clear. The allergen was present in the light latex but not in the dark glove (patch test).

Partial allergic study had shown the patient also to be sensitive to sheep dander (wool).

It is, of course, impossible to define the onset of the rubber glove sensitiveness, which may have been coincident with the introduction of the allergen into the manufacturing formula and the appearance of latex gloves in operating rooms rather than with any specific event in the patient's history. He has remained well despite overwork and indifference about the background factors, except when specific glove contact provocation was provided. It remains to be seen whether new factors will appear or tolerance to the latex ingredient develop from avoidance—though this is improbable.

CASE 2.—A surgeon aged 38 had severely infected hands for eighteen months. The predisposing background included a family history of high nervous tension, of hay fever and of infantile eczema in siblings; of severely infected tonsils and teeth and severe arthritis, recurrent in himself. His diet was low in meat; he ate fruit three times daily. He used almost no alcohol. He took no drugs. He rested from 12 to 8. The emotional load was heavy (tears). Urticaria of the palms and hands repeatedly followed the eating of peaches. He was sensitive to soap, hard water, mercury ammoniate and bichloride, and tar. He specifically denied rubber glove irritation. There had not been previous skin infections except for an abortive attack of athlete's foot.

Examination disclosed severe dermatitis of the hands with typical small pustules. Routine bacteriologic methods disclosed only Staphylococcus albus. Rest, Castellani paint, avoidance of soap and the basic nonallergic dietary test were prescribed.

Seventeen days later a violent flare occurred with acute lymphangitis, fever and a leukocytosis of 16,000. He was hospitalized.

Special studies were undertaken. Bacteriologic examination disclosed hemolytic streptococci and staphylococci. Oral sulfanilamide and sulfapyridine therapy resulted in much improvement but considerable residual dermatitis. Focal infections consisted in an opaque sinus and mucocele (?). With regard to allergy, ingestants included a number of weak positives including several food favorites but not including peaches, which had been shown to be responsible for hand urticaria. Contactants included dog fur (he has three dogs), orris root (he cannot use scented powders) and wool. Experiments with a therapeutic lamp (S_1) indicated that he was from time to time or had become transiently light sensitive. Staphylococcus toxoid tests and tests to an autogenous hemolytic streptococcus suspension indicated, by necrotizing reactions with lymphangitis, a hyperallergic reaction to his infecting organism. The flare effect ("broadening the base") of virus infection even in members of his family (recall his allergic type sinus involvement) was several times demonstrated.

Rubber gloves were finally suspected to be the excitant, although at first the possibility was specifically denied by the patient, following relapse after a long operation in which practically well hands began to show irritation in twenty minutes (dark rubber gloves). A patch test from these gloves was positive. Neoprene gloves were tolerated, but a standard rubber glove a year later provoked a relapse after thirty-six hours despite the fact that a cotton glove had been worn under the rubber glove. Seen three years later the patient, employing allergen eliminative precautions and wearing nonallergic gloves, had reduced his dermatitis to faint traces on two finger webs, and he was able with the usual washing technic to carry a full operative schedule. His background had been materially improved. Lasting desensitization had not been accomplished.

Case 3.—An industrial physician aged 55, heavily overworked by the war emergency, developed in 1940 a dermatitis involving the tips, dorsa and sides of the fingers. The hands were equally involved from the start, a puzzling factor until it was found that he was truly ambidextrous. The distribution to contact points likely to be involved in his dispensary work suggested procaine hydrochloride, pontocaine hydrochloride, suture ampule fluids and alcohol denaturants as leading excitants, acting on a soap predisposed (low skin alkali tolerance) background. The fingernails suggested mercury bichioride effects, the toenails fungous infection, scrapings overlooked.

As predisposing causes, his children had mastoiditis, suppurative appendicitis, infantile eczema and hay fever, patient himself lobar pneumonia, catarrhal jaundice, severe tonsillitis, quinsy, mild appendicitis, athlete's foot, and influenza in 1918. His diet had a high sugar content and he was a moderate user of alcohol. He did not use drugs. The tonsils were infected. Infected teeth were removed without benefit. There was an old sinusitis. His nervous load included family problems, responsibility for 16,000 men, inadequate assistance and private practice. He was troubled with sweating hands (rubber gloves made his condition worse).

As exciting causes, contacts included dog fur, Lifebuoy soap (which caused itching), ST 37, Kaldermic suture fluid, catgut and suture fluid (xylene?), pontocaine hydrochloride and procaine hydrochloride. From the distribution, pontocaine and suture fluid were suspected. Latex rubber gloves were routinely tested. Positive patch tests were obtained to both suture fluids and pontocaine. Procaine was negative.

The latex glove test was mildly positive after twenty minutes' exposure of a patched site.

Almost complete recovery followed a nonsoaping and greasing regimen with protection from allergens by nonallergic rubber gloves. This was in contrast to the previous elaborate but unsuccessful treatment, including x-rays. Slight fissuring persisted at the finger tips. The evaluation was incomplete because (*a*) search for a fungus was not made and (*b*) a general allergic workup was not done. Another infected tooth was found, infected tonsils were not removed and the prostate was not studied. Improvement was 85 per cent.

Clinical Notes, Suggestions and New Instruments

A NEW TEST FOR THE DETECTION AND THE APPRAISAL OF EXPOSURE TO TRINITROTOLUENE

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In the course of an experimental study of the toxicity of trinitrotoluene and the mechanism of its action, it was found that trinitrotoluene is partly reduced in the organism with the formation of amines. One of these is presumably 2,6-dinitro-4-aminotoluene. Although sufficient quantities for chemical identification have not been isolated from the urine so far, certain characteristics seem to favor this assumption. It appears very likely that other reduction products such as mononitrodiaminotoluene and dinitrohydroxylaminotoluene and its derivatives may be encountered, but so far none of these have been identified by us in urines of experimental animals and man. These studies are still in progress and will be reported at a later date together with a discussion of the pertinent literature, but a test developed for the determination of 2,6-dinitro-4-aminotoluene was applied to a large number of urines of workers exposed to trinitrotoluene and was found to be more sensitive and more quantitative than the Webster test or any of its modifications. In a study of 98 women and 245 men exposed to trinitrotoluene the average daily excretion of the amine was found to be 1.29 mg. and 2.06 mg., respectively, with 0.0 and 33.5 and 0.27 and 28.75 mg. as extremes. For this reason the original method was simplified and adapted for clinical use so that it might be used for the appraisal of exposure of workmen handling trinitrotoluene. This method is based on the extraction of the metabolites of trinitrotoluene with ether and determination of the amine in the ether extract after evaporation of the ether by diazotization and coupling with α-naphthylamine, extraction of the latter with toluene, and comparison of the orange-yellow color formed with a set of standards.

The procedure is as follows: Place 50 cc. of urine in a 125 cc. Erlenmeyer flask, add 2 cc. of hydrochloric acid (specific gravity 1.18) and boil gently for one minute. After cooling, add 1 drop of capryl alcohol and 3 to 4 Gm. of sodium bicarbonate in divided portions. After the evolution of carbon dioxide has ceased, shake the solution thoroughly but not vigorously with 100 cc. of ether in a separatory funnel for five minutes. Allow the layers to separate and wash the ether layer successively with 25 cc. of 1 per cent sodium carbonate solution and 25 cc. of distilled water. During this extraction, emulsions occur frequently. When this happens allow the mixture to stand until the layers are reasonably well separated, drain off the lower layer and proceed with the washing. If the emulsion persists, add, after the last washing has been drained off, sufficient anhydrous sodium sulfate to break the emulsion in the ether layer, allowing the clear ether layer to be decanted. Using aliquot portions of the ether extract, the ether is evaporated or distilled off from a 125 cc. Erlenmeyer flask containing 10 cc. of water acidulated with 3 to 4 drops of 2-normal hydrochloric acid. Transfer the aqueous residue while still hot to a 25 cc. glass stoppered cylinder, cool to 20 to 25 C. and add in rapid succession, with adequate agitation after each addition, 1 cc. of a freshly prepared 0.1 per cent solution of sodium nitrite, 1 cc. of 0.5 per cent sulfamic acid and 1 cc. of a freshly prepared saturated aqueous solution of α-naphthylamine. Let the mixture stand for about ten minutes, then add 10 cc. of toluene and shake vigorously. Separate the layers and transfer the toluene extract to a test tube of the same size as used for the preparation of the standards, add about 1 Gm. of anhydrous sodium sulfate, shake, and compare the intensity of the color with the set of color standards.

The standards are prepared as follows: 1. Fifty mg. of chemically pure methyl orange is dissolved in 100 cc. of distilled water and 14 cc. of this solution is diluted to 100 cc. with

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distilled water. 2. A buffer solution (No. 1) is made by adding 0.40 cc. of fifth molar sodium hydroxide to 50 cc. of fifth molar potassium acid phthalate and diluting to 200 cc. with distilled water. 3. A buffer solution (No. 2) is made by adding 3.65 cc. of fifth molar sodium hydroxide to 50 cc. of fifth molar potassium acid phthalate and diluting to 200 cc. with distilled water. For the preparation of the standards the proper amounts of the methyl orange solution and the buffer solutions are mixed as given in table 1 to make 10 cc. in clean Pyrex test tubes, which are then sealed. If kept in the dark when not in use, these standards will not change color for at least three months.

Since the range of these standards is limited to concentrations of 0.01 mg. to 0.15 mg. of 2,6-dinitro-4-aminotoluene per 10 cc. it may be necessary in some cases to use aliquot portions of the original ether extract of the urine for the determination. With low concentrations of amine in the urine, 50 cc. of urine and the entire ether extract will give an adequate intensity of color. With higher concentrations of the amine, aliquot fractions of the ether extract may be used for the determination, or the final toluene extract may be diluted further with known amounts of toluene until the color intensity or shade falls within the range of the standards, and the final reading is multiplied in accordance with the dilution.

TABLE 1.—*Composition of Standards for the Determination of 2,6-Dinitro-4-Aminotoluene*

2,6-Dinitro-4-Aminotoluene (Amount in Mg. in 10 Cc.)	Methyl Orange Solution in Cc.	Buffer Solution in Cc.
0.00	0.0	10.0
0.01	0.2	9.8 buffer No. 1
0.02	0.6	9.4 buffer No. 1
0.05	1.0	9.0 buffer No. 1
0.07	1.4	8.6 buffer No. 2
0.09	1.8	8.2 buffer No. 2
0.11	2.3	7.8 buffer No. 2
0.13	2.6	7.4 buffer No. 2
0.15	3.0	7.0 buffer No. 2

TABLE 2.—*Determination of 2,6-Dinitro-4-Aminotoluene in Human Urine Containing Known Amounts of the Amine*

Amine Added in Mg. per 50 Cc.	Amine Recovered in Mg. per 50 Cc.
0.1	0.10 to 0.14
0.2	0.14 to 0.18
0.3	0.29
0.4	0.36 to 0.44
0.5	0.45
0.6	0.68
0.7	0.77
0.8	0.72 to 0.88
0.9	0.89
1.0	1.1

Table 2 gives the results of determinations made by this method with human urines containing known amounts of 2,6-dinitro-4-aminotoluene. It shows that the method allows a sufficiently accurate estimation of the amount of amine excreted.

It should be pointed out that this method is not specific for 2,6-dinitro-4-aminotoluene because any primary aromatic amine which is soluble in ether will be diazotized and coupled with the formation of a pigment. However, the extraction of the coupled product with toluene prior to the colorimetric determination affords a certain specificity in that no compound tested so far is as soluble in toluene as 2,6-dinitro-4-aminotoluene. After diazotization and coupling, sulfanilamide, for example, will remain mainly in the aqueous phase since its solubility in toluene is rather low. Of other drugs tested, the ingestion of acetanilid will cause very little, and the ingestion of aminopyrine will cause no interference with the determination of the amine. While no normal urine tested has yielded a color after diazotization and coupling, occasionally some urine will contain a pigment which passes unchanged through the various procedures into the final toluene extract. If no amine is present in the urine this color will not be changed after diazotization and coupling, but in the presence of amine there will be a change of the color of the solution after diazotization and coupling. In such urines the evaluation of the amount of amine present will require some discretion, and the determination should be repeated after a few days.

SUMMARY

A method has been devised for the determination of 2,6-dinitro-4-aminotoluene in the urine of workers exposed to trinitrotoluene, and its limitations have been determined. This method has the advantage over the Webster test in that the final color is stable and allows a quantitative determination.

TOXIC REACTIONS TO SUCCINYLSULFATHIAZOLE

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With the establishment of the bacteriostatic value of the different sulfonamides in various infections, it was a logical step to seek for a drug of this group which would control the normal and pathologic flora of the intestine. The fundamental requirements of such a drug were that it should be an effective bacteriostatic agent against coliform organisms in their natural habitat, that it should be so slightly absorbed that an adequate concentration in the bowel might be maintained, and that it should be nontoxic to the human organism. Marshall and his associates [1] first introduced a drug appreciably water soluble but poorly absorbed, sulfanilylguanidine, and showed its clinical usefulness in bacillary dysentery. Subsequently Poth,[2] Firor,[3] and others introduced succinylsulfathiazole as an intestinal antiseptic and established the fact that in adequate dosage it lowered the coliform count of the stools significantly in over 90 per cent of cases in dogs and men. They also showed that even in large doses the drug is poorly absorbed, reaching levels of less than 2 mg. per hundred cubic centimeters in the blood when given alone in their series. No evidence of toxicity was encountered.

On the basis of a series of 50 patients who subsequently underwent surgical procedures involving the large bowel and who were treated preoperatively with succinylsulfathiazole, Poth [4] concluded that administration of the drug largely eliminated complications due to infection and rendered the convalescence smoother and shorter than in untreated patients, though control cases are not presented in this study. As a further instance of the usefulness of this sulfonamide, Poth, Chenoweth and Knotts [5] have reported a series of 20 cases of bacillary dysentery in which the age ranged from 8 weeks to 83 years, all successfully treated with succinylsulfathiazole. More recently Smyth and his associates [6] have reported successful therapy of 12 out of 14 cases of Flexner type dysentery using succinylsulfathiazole.

TOXICITY OF SUCCINYLSULFATHIAZOLE

Throughout the reports on the use of this drug emphasis is placed on its freedom from toxicity, and it is advertised as a "clinically nontoxic intestinal bacteriostat." Admittedly, unfavorable reactions are uncommon—much more so than with sulfanilylguanidine, but toxic phenomena do occur. Welch, Mattis and Latven [7] in an extensive toxicologic study on monkeys showed that administration by stomach tube of up

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1. Marshall, E. K., Jr.; Bratton, A. C.; White, H. J., and Litchfield, J. T., Jr.: Sulfanilylguanidine: A Chemotherapeutic Agent for Intestinal Infections, Bull. Johns Hopkins Hosp. **67**: 163 (Sept.) 1940. Marshall, E. K., Jr.; Bratton, A. C.; Edwards, Lydia B., and Walker, Ethel, ibid. **68**: 94 (Jan.) 1941.

2. Poth, E. J., and Knotts, F. L.: A New Bacteriostatic Agent Locally Active in the Gastrointestinal Tract, Proc. Soc. Exper. Biol & Med. **48**: 129 (Oct.) 1941. Poth, E. J.; Knotts, F. L.; Lee, J. T., and Imai, Frank: Bacteriostatic Properties of Sulfanilamide and Some of Its Derivatives: I Succinylsulfathiazole, a New Chemotherapeutic Agent Locally Active in the Gastrointestinal Tract, Arch. Surg. **44**: 187 (Feb.) 1942. Poth and Knotts.[3]

3. Firor, W. M.: Intestinal Antisepsis with Sulfonamides, Ann. Surg. **115**: 829 (May) 1942.

4. Poth, E. J.: Succinylsulfathiazole, an Adjuvant in Surgery of the Large Bowel, J. A. M. A. **120**: 265 (Sept.) 1942.

5. Poth, E. J.; Chenoweth, B. M., and Knotts, F. L.: A Preliminary Report on the Treatment of Bacillary Dysentery with Succinylsulfathiazole, J. Lab. & Clin. Med. **28**: 162 (Nov.) 1942.

6. Smyth, C. J.; Finkelstein, M. B.; Gould, S. E.; Koppa, T. M., and Leeder, F. S.: Acute Bacillary Dysentery (Flexner): Treatment with Sulfaguanidine and Succinylsulfathiazole, J. A. M. A. **121**: 1325 (April 24) 1943.

7. Welch, A. D.; Mattis, P. A., and Latven, A. R.: A Toxicological Study of Succinylsulfathiazole, J. Pharmacol. & Exper. Therap. **75**: 231 (July) 1942.

to 5 Gm. per kilogram daily of succinylsulfathiazole in six equal doses produced blood levels of 3.0 mg. of the drug per hundred cubic centimeters and 0.8 mg. of free thiazole per hundred cubic centimeters and led to no toxic effects. Intravenous administration of the sodium salt in doses up to 1 Gm. per kilogram produced total drug levels as high as 170 mg. per hundred cubic centimeters and resulted in excretion of urine containing as much as 12 Gm. of succinylsulfathiazole per hundred cubic centimeters with frequent crystalluria whose intensity varied with p_H as well as with urinary drug concentration, the more acid specimens showing heavier crystalline deposits. Some urines showed massive crystalluria with 4 per cent drug concentrations, while others failed to show any with 10 per cent concentrations. These authors reported hematuria in occasional crystal loaded urines, but it is not clear whether this was gross hematuria and whether all specimens were examined microscopically for blood.

No previous reports of hematuria in man attributable to succinylsulfathiazole have been encountered, but Poth [8] mentions infrequent complaints of headache, dizziness and anorexia. He cites a single case in which 0.25 Gm. (presumably per kilogram) of the drug had been administered daily for eight days for chronic ulcerative colitis with complaints of headache, nausea, vomiting, chills and arthralgia associated with a temperature of 103 F., lesions similar to erythema nodosum on the anterior surfaces of the legs, moist rales in the chest and a 5 per cent eosinophilia. A week later, when the reaction had subsided, administration of a single gram of sulfathiazole produced a temperature of 103.6 F. and the symptoms and signs described in the first reaction. Smyth and his associates [6] observed sulfonamide crystals in the urine of 10 to 14 patients treated with succinylsulfathiazole for Flexner dysentery but none in the urine of 10 patients hospitalized for other causes and given succinylsulfathiazole as controls.

The records of the Johns Hopkins Hospital show that 100 hospitalized adult patients have received succinylsulfathiazole for periods up to five weeks for such diverse conditions as colonic carcinoma, diverticulitis, bacillary dysentery, accidental perforations of the bowel, ureterosigmoidostomy, chronic fecal fistula and rectovaginal fistula. While the dosage in the vast majority of cases was, as recommended by Poth and Knotts,[8] 0.25 Gm. per kilogram as an initial dose and as a daily dose divided into six equal portions, some few patients have received less than this while several have received much more. One patient with a chronic postoperative cecal fistula was given 81 Gm. daily by mouth and a similar quantity by colostomy for two days, after which the dosage was gradually diminished to 27 Gm. daily by mouth. The drug was discontinued only after seventeen days without reaction. In this series of 100 cases, aside from a case of conjunctivitis questionably due to drug, there were only two unfavorable reactions: the first, a case of fever, rash and arthralgia similar to Poth's case, and the second a case of crystalluria with hematuria. The following are brief case reports:

REPORT OF CASES

CASE 1.—A Negro woman aged 44 was referred to the hospital on March 15, 1943 by her physician, who felt a mass in the left lower quadrant of the abdomen. She had had symptoms of chronic low bowel obstruction for eighteen months and had been hospitalized elsewhere for six weeks for acute obstruction six months previously, being treated by bland diet and enemas. On discharge she herself noticed a small mass in the left lower quadrant of the abdomen, and this grew progressively larger while the patient lost 30 pounds (13.6 Kg.). On admission to the Johns Hopkins Hospital she was afebrile, the bowels were unobstructed, the stools were benzidine positive, and a mass the size of a grapefruit was palpable in the left side of the abdomen. A barium sulfate enema revealed a filling defect in the left side of the colon. The patient was given 15 Gm. of succinylsulfathiazole immediately and started on a regimen of 4 Gm. of the drug every four hours. The temperature had begun to rise four hours after the initial dose and reached 105.4 F. orally in twenty-four hours. The chest showed no abnormal physical signs, the urine contained no white cells and the abdominal findings were unchanged. The blood drug level of free thiazole was 1.0 mg. per hundred cubic centimeters. The drug was discontinued twenty hours after it was started and after the patient had taken 39 Gm. The temperature continued elevated, reaching 105.8 F. twenty-four hours after discontinuance of the drug. Meanwhile, aside from being warm, the patient felt well and ate with good appetite while the temperature was 105 F. Following discontinuance of the drug the temperature, as stated, remained elevated twenty-four hours and then began to fall. Two days after the maximum elevation the temperature was normal. In order further to confirm the diagnosis of drug reaction the patient, when afebrile, was given a single dose of 5 Gm. of succinylsulfathiazole. The temperature gradually rose with fluctuations, reaching 102.6 F. two days later, after which it gradually fell to normal. In addition, an hour after the drug was given a pruritic morbilliform rash appeared on the flexor surfaces of the arms and the adductor surfaces of the legs, and generalized myalgias and arthralgias were bitterly complained of. The rash persisted three days and the other symptoms four days.

At operation an adenocarcinoma of the descending colon was resected, and the transverse colon was anastomosed end to end with the sigmoid. There were metastases in the preaortic nodes. The postoperative course was entirely uneventful; the patient got up on the tenth postoperative day and went home a week later, completely asymptomatic.

CASE 2.—A man aged 54, a Czechoslovakian, was first admitted to the Johns Hopkins Hospital in May 1939 with symptoms and signs of complete low bowel obstruction for four days. At operation adhesions about the terminal ileum were released, but distention persisted postoperatively. Two weeks after discharge obstruction recurred and laparotomy revealed a carcinoma of the sigmoid, which was resected by the Miculicz procedure. The patient was discharged with an excellently functioning colostomy, which was closed successfully seven months later. Two and one-half years later he was again admitted with a story of partial obstruction for ten days, and a barium sulfate enema showed a constriction in the sigmoid. On Sept. 28, 1942 the patient was given 16 Gm. of succinylsulfathiazole and started on a regimen of 2.5 Gm. every four hours. On the sixth day, October 3, he complained of dull right lumbar pain and his urine, which had been normal on admission as on each previous occasion, was grossly bloody and contained sulfonamide crystals. The drug was discontinued but a blood level was not obtained until two days later, when it was 3.83 mg. of free thiazole per hundred cubic centimeters. Microscopic hematuria of diminishing intensity was noted for eight days after the drug was discontinued, and sulfonamide crystals were detected in the urine as late as the fifth day after onset of hematuria. On the fifth day the blood level was 1.3 mg. of free thiazole per hundred cubic centimeters.

A 20 cm. segment of large bowel with recurrent tumor, which was found to have invaded the abdominal wall, was resected after the hematuria subsided. End to end anastomosis was carried out. The wound became infected and had not completely healed when the patient was discharged with normal bowel function thirty-six days postoperatively.

COMMENT

Case 1 represents an instance of drug fever which, while not the first reported attributable to succinylsulfathiazole, is unusual in that it occurred so soon after initiation of therapy. It also indicates that, as with other sulfonamides, arthralgia and rash may appear during the course of succinylsulfathiazole therapy. The second case is, so far as can be ascertained, the first one of hematuria attributable to this drug, although crystalluria, which accompanied the hematuria, has previously been observed. The small total number of patients followed warrants no conclusion as to the frequency of such unfavorable reactions to be anticipated, but the fact that they do occur makes it imperative that patients receiving the sulfonamide be carefully watched and frequent urinalyses carried out. While anemia attributable to succinylsulfathiazole did not occur in this series, the supposition seems warranted by analogy to related drugs that it will occur, and frequent blood examinations are certainly indicated.

8. Poth, E. J., and Knotts, F. L.: Clinical Use of Succinylsulfathiazole, Arch. Surg. 44: 208 (Feb.) 1942.

Special Article

THE DRUG TREATMENT OF MALARIA, SUPPRESSIVE AND CLINICAL

The following article from the Office of the Surgeon General of the Army has been distributed as Circular Letter No. 153:

1. *Efficacy of Atabrine, Quinine and Plasmochin.*—a. Available evidence indicates that atabrine is as effective as quinine (or more so), both in suppressive use and in the treatment of clinical attacks. No available drug or plan of administration can be expected to prevent relapses in all cases (see paragraph 6). Recent studies have shown that the plasma level of the drug is fundamental in determining its efficacy. Under ordinary conditions the rates of absorption of the two drugs are not significantly different. Quinine is localized in the tissues to a smaller extent than atabrine, and effective plasma concentrations, therefore, are usually attained shortly after the beginning of its administration. Atabrine, on the other hand, at first is taken up to a much larger extent by the tissues, so that effective concentrations in the plasma are reached only as certain tissues become more or less saturated. On the usual dosage plans, therefore, quinine reaches an effective plasma level more rapidly than atabrine. In order to attain effective concentrations of atabrine in the plasma, it is necessary to give relatively large initial doses (as is done with the sulfonamides) or to wait for a varying period while the drug accumulates. Further discussion of the desirable methods of giving atabrine will be found under Suppressive Treatment (paragraph 4) and Clinical Treatment (paragraph 5). Since a great many different plans of giving atabrine and quinine have been tested, little can be gained by numerous modifications which serve only to confuse the problem.

b. Plasmochin cannot be used for suppressive treatment, since in safe doses it has very little effect on schizonts. For the same reason it fails to control clinical attacks of malaria; hence plasmochin alone cannot be used in clinical treatment. This drug has some degree of special action in the destruction of gametocytes, an effect which does not influence the course of the disease in the patient but might be of value in controlling the spread of the disease. It has not been established, however, that the use of plasmochin constitutes a practical method of malaria control. It is also stated that the incidence of relapses is less when plasmochin is given after atabrine or in conjunction with quinine, but this is a matter of controversy and the claim has not been borne out by recent experience. After consideration of the possible advantages and the toxic effects (see paragraph 2 c), in addition to the prolongation of hospitalization, the routine use of plasmochin is not advised.

2. *Untoward Effects of Atabrine, Quinine and Plasmochin.*—Each of these drugs is capable of producing toxic reactions. Occasional individuals are peculiarly intolerant of each.

a. Mild disagreeable reactions from atabrine may occur in a certain percentage of individuals given the drug for suppressive treatment. When such symptoms occur, they usually follow one of the first few doses. They are much more apt to occur when atabrine is given between meals. They may consist of nausea, abdominal cramps or occasionally headache, vomiting and diarrhea. These symptoms may be prevented in most cases by giving sodium bicarbonate or sweetened drinks such as tea with the atabrine. They are never serious and almost invariably disappear if the drug is continued. In a small percentage of some groups of patients receiving clinical treatment mild excitement has been observed. Toxic symptoms of any type are unusual in association with the treatment of clinical attacks with atabrine. There are on record only a very few instances in which hepatic disease may have been associated with therapeutic doses of atabrine and none with suppressive treatment. Approximately one third of the individuals taking atabrine develop a yellow discoloration of the skin. This is caused by the deposit in the skin of atabrine (which is a dye). It does not represent hepatic damage, is not dangerous and is not an indication for discontinuing the drug. The discoloration disappears within a few weeks after the drug is stopped. Extensive investigation has failed to show that atabrine in the usual doses has any effect whatever on flight capacities of flying personnel. Atabrine in suppressive doses has been taken by large groups for a year or more without known lasting untoward effect.

b. Outstanding untoward results of quinine which appear in most patients following therapeutic doses of the drug are tinnitus, impairment of hearing, dizziness, tremor and palpitation. They have been used as an index that the drug is being absorbed and is exerting an effect. In milder degree some of these symptoms may be seen during suppressive treatment. Some aviators have found them troublesome. The more unusual severe untoward effects of quinine are generally the result of individual hypersensitivity or of unnecessarily large doses.

c. The margin of safety between therapeutic and toxic doses of plasmochin is small. The toxic symptoms include abdominal pain, nausea, vomiting, cyanosis, headache, dizziness and drowsiness; hemoglobinuria, jaundice and acute yellow atrophy of the liver are rarer but very dangerous effects.

3. *Conservation of Quinine.*—The limitation of the supply of quinine is so great that the use of the drug must be restricted as directed in S. G. O. Circular Letter No. 179, Dec. 21, 1942. Quinine should never be used for suppressive treatment except in emergencies when atabrine is not available and, exceptionally, for the very few individuals who cannot tolerate atabrine. Its use for clinical attacks should be restricted to the following types of cases:

a. Severe infections with Plasmodium falciparum in which intravenous therapy is deemed essential.

b. Serious intolerance to atabrine.

c. When atabrine is not available.

d. Following repeated relapses in spite of atabrine therapy, when a change of drug is considered highly desirable. In such cases a complete course of quinine may be used as described in paragraphs 5 b (2) and 6 c.

4. *Suppressive Treatment.*—a. Drug suppressive treatment is an emergency procedure which should be employed only when troops must accomplish a mission in an area where there is a substantial risk from malaria and where protection by mosquito control measures is not possible. At present there is no drug known which, in safe doses, will prevent mosquito borne infection

with malaria. However, atabrine, taken regularly in proper doses, suppresses clinical symptoms for varying periods of time and enables men to remain active in spite of infection which otherwise would incapacitate them. For this reason suppressive treatment has its chief use among troops that must maneuver or fight in malarious regions and cannot be given full protection from mosquitoes. When these troops return to sanitated areas, suppressive treatment should be discontinued as soon as feasible.

b. For suppressive treatment to be effective it is essential that the drug be taken regularly. Experience has shown that a roster check with each dose is the only practical means of accomplishing this result. This is the responsibility of the unit commander.

c. In general, suppressive treatment should be instituted as soon as possible after arrival in an unsanitated malarious area. There are, however, certain advantages in starting the administration of atabrine in advance of exposure when it is practicable to do so. First, opportunity is afforded to discipline officers and men in establishing the routine of taking atabrine. Second, such disagreeable reactions as may occasionally accompany the first few doses are experienced before the men engage in combat activities. Third, recent experimental studies show that with the suppressive dosage of atabrine recommended in paragraph 4 f the maximum plasma concentration of the drug is not attained until after the third week. Hence the institution of atabrine suppressive treatment two weeks in advance of exposure may be advantageous in that a high plasma level of the drug is achieved by the time clinical symptoms might be expected to appear. However, when men must travel to their destination by boat, seasickness may be a contraindication to the institution of atabrine suppressive treatment in the period preceding arrival in the malarious area.

d. When suppressive treatment is discontinued, most of the men who have been infected will develop clinical malaria (the majority within two or three weeks) and will then require clinical treatment (see paragraph 5). Consequently, suppressive treatment should not be stopped until the men have returned to a base where adequate medical care is available. When a large force returns from a hyperendemic area it may be wise to stagger the cessation of suppressive treatment in order that hospital facilities may not be overtaxed.

e. *Occurrence of Clinical Symptoms During Suppressive Treatment.*—In highly malarious regions, especially under the stress of combat, suppressive treatment may fail to prevent clinical symptoms in a certain percentage of cases. These cases should be given a course of clinical treatment (see paragraph 5), following which the suppressive treatment should be resumed, if still indicated. Many instances of so-called break-through of clinical symptoms can be traced to failure of the individual to take the drug regularly.

f. *Administration of Atabrine for Suppressive Treatment.*—The recommended method is to give 0.1 Gm. of atabrine (1½ grains, i. e. one tablet) once daily at the evening meal six days each week (total 0.6 Gm. per week).

g. An alternative method of suppressive atabrine administration, which has been satisfactory in some areas, is to give 0.05 Gm. of atabrine (¾ grain, i. e. one-half tablet) once daily at the evening meal six days each week, and a dose of 0.1 Gm. (1½ grains, i. e. one tablet) at the evening meal on the seventh day (total of 0.4 Gm. per week).

h. Quinine, because of the limited supply available, should not be used for suppressive treatment except in the few cases mentioned (paragraph 3). Recommended dosage is 0.6 Gm. (10 grains) of quinine sulfate daily at the evening meal.

i. Plasmochin should not be used for suppressive treatment at any time.

5. *Treatment of Clinical Attacks.*—a. Diagnosis: (1) Malaria should be suspected not only in patients with periodic chills and fever but also in any obscure illness, febrile or nonfebrile, in endemic regions. The symptoms of malaria may vary in different cases from mild headache or diarrhea to severe chills and fever, and to delirium or coma.

(2) In general, the diagnosis must be based on the actual finding of parasites in the blood. In each suspected case, examine the blood as soon as possible. Thick smears are preferable because the parasites are concentrated. Each smear should be examined carefully for at least five minutes before being pronounced negative. Thin smears should also be made for use when species diagnosis cannot be made from thick smears; each smear should be examined carefully for at least fifteen minutes. In P. falciparum infections estimate the proportion of infected erythrocytes; when 5 per cent or more erythrocytes are infected, treat as you would a comatose patient [see paragraph 5 c (2)]. If parasites are not found, make smears on successive days, because the symptoms in a first attack may appear when the density of parasites is low and because in P. falciparum infections there may be very few parasites in the circulating blood during the second twenty-four hours of each asexual cycle.

(3) Even in severe P. falciparum infections with cerebral symptoms, including coma, it may be difficult to demonstrate parasites. Suspect as P. falciparum malaria every case of febrile illness in which coma or medical shock occurs in a patient in or from an endemic area. Excessive fatigue, headache and fever are frequently the only prodromal symptoms of cerebral malaria. This form may simulate acute alcoholism or the patient may be maniacal, requiring morphine. During the stage of onset the temperature is often little elevated and in the presence of coma it may be normal or subnormal. If the facilities for immediate examination of blood smears are not available, malarial therapy should be immediately instituted in such emergency cases.

(4) When treatment is started before parasites are demonstrated, it should not be continued beyond a period of one week, unless the diagnosis is confirmed by finding parasites. It is rare that the fever of malaria fails to respond to adequate doses of atabrine or quinine.

b. Uncomplicated Malaria (patient able to retain oral medication): Be sure that each patient takes the drug as ordered. Each dose should be taken in the presence of a nurse or medical officer. Even though vomiting has not occurred, occasional patients receiving oral therapy fail to absorb the drug adequately. If the diagnosis has been confirmed, patients who are seriously ill and do not respond should receive intramuscular or intravenous therapy, as described in paragraph 5 c, until a therapeutic response is obtained. In

occasional cases, especially of P. falciparum infection, in which fever is persistent, method (1) or (2) should be continued beyond the period of seven days, at the discretion of the medical officer:

(1) The method of choice is to use atabrine alone. In accordance with the principles outlined in paragraph 1 a, atabrine should be given in relatively large initial doses, followed by smaller maintenance doses. Recommended dosage: atabrine hydrochloride 0.2 Gm. (3 grains) and sodium bicarbonate 1 Gm. (15 grains) by mouth with 200 to 300 cc. of water (or an equal amount of sweetened tea or fruit juice) every six hours for five doses, followed by 0.1 Gm. (1½ grains) three times a day after meals for six days (total 2.8 Gm. in seven days).

(2) If atabrine is not available, use quinine alone, as follows: quinine sulfate 1 Gm. (15 grains) by mouth three times a day after meals for two days, followed by 0.6 Gm. (10 grains) three times a day after meals for five days (total 16 Gm. in seven days).

(3) Plasmochin may be given in connection with either of the foregoing treatments; however, its routine use is not advised. If plasmochin is given, the patient must be hospitalized and closely observed. The dosage given below should not be exceeded. Plasmochin may be given immediately following atabrine (not with it) or along with quinine on the last days of treatment with that drug. The course consists of plasmochin 0.01 Gm. (⅙ grain) by mouth three times a day after meals for four days except for the debilitated patient, who should receive only two doses a day. Each dose of plasmochin should be accompanied by at least 1 Gm. (15 grains) of sodium bicarbonate. The fluid and sugar intake should be liberal during and for some days after the course. Discontinue plasmochin at once if any toxic symptoms appear.

c. Severe Malaria or Malaria Complicated by Vomiting, Coma or Other Serious Disorders: In these cases, and whenever a patient cannot retain or fails to respond to oral medication, atabrine or quinine should be given parenterally by one of the methods described below [paragraph 5 c (2) (a) or (b)].

(1) If vomiting is present, take general measures to control it. Do not allow solid food just before a febrile paroxysm is expected. If there is nausea or vomiting, sips of alkaline water may be helpful. If vomiting is frequent and troublesome, the intravenous administration of 5 per cent dextrose in isotonic solution of sodium chloride is indicated, as many patients who vomit become dehydrated and develop acidosis. From 200 to 400 cc. may be injected by the usual technic; this injection may be repeated if necessary, or larger amounts may be given by the continuous drip method (at the rate of 50 drops per minute). When dextrose is administered in this way, it should be supplemented with 1 mg. of thiamine hydrochloride for each 25 Gm. of dextrose.

(2) Coma may be present or imminent in cases of P. falciparum infection, even though parasites are not found in the blood smear. This condition constitutes a grave emergency. On reasonable suspicion of the diagnosis, parenteral treatment must be immediately instituted. The intravenous administration of quinine as described in paragraph 5 c (2) (b) is preferable in the light of present knowledge, but it is possible that the intramuscular injection of atabrine is equally effective.

Recommended parenteral methods are as follows:[1]

(a) Atabrine dihydrochloride 0.2 Gm. (3 grains) in 5 cc. of sterile distilled water injected intramuscularly with the usual precautions into each buttock (total 0.4 Gm. or 6 grains). If necessary, one or two additional doses of 0.2 Gm. (3 grains) may be given intramuscularly at intervals of six to eight hours. As soon as the patient can take and retain oral medication atabrine should be given by mouth in such doses as to give a total by both routes together of 1.0 Gm. in forty-eight hours, followed by 0.1 Gm. three times a day after meals for five days (total 2.8 Gm. in seven days).

(b) Quinine dihydrochloride 0.6 Gm. (10 grains) in sterile isotonic solution of sodium chloride 300 to 400 cc. (minimum 200 cc.) injected intravenously with the usual precautions, especially avoiding speed. If necessary, there should be no hesitation to cut down to the vein. This treatment may be repeated in six to eight hours if the situation demands it. When the patient can take and retain oral medication give a complete course of atabrine (preferable) or quinine by mouth as described for uncomplicated cases in paragraph 5 b.

d. General Care: (1) Keep the patient in bed. Maintain fluid intake at 3 to 4 liters per twenty-four hours, using the intravenous route if necessary. Since many patients with malaria may lose a great deal of salt, be sure that the intake of salt is adequate, giving supplementary amounts as may be indicated. Relieve chills by hot water bags and blankets. Relieve high fever by cold sponges and packs (avoid antipyretics). If a sedative is necessary, use one of the barbiturates. In all cases of P. falciparum infection observe the patient closely for signs of cerebral or circulatory collapse.

(2) Patients with clinical malaria or parasitemia should be in screened wards or under mosquito bed nets (with care that they do not sleep against the nets).

(3) In convalescence give a generous high vitamin diet, together with ferrous sulfate 0.6 Gm. (10 grains) three times a day after meals for at least two weeks (preferably longer).

6. *Relapses.*—a. Occurrence: A certain percentage of patients with malaria suffer recrudescences or relapses in spite of any available treatment. The incidence and persistence of recurrences are greatest in P. vivax infections. For this reason the original incidence of the species of infection cannot be estimated from their distribution in a group of patients with recurrent clinical activity. The first free interval may be as short as two or three weeks; later on the intervals grow longer and may be many months. With each successive relapse the chance that it will be the last increases. This is one reason why the evaluation of treatment plans in relapses is difficult.

b. Diagnosis: The diagnosis of late relapses is often difficult. As long as a patient remains in an endemic area the distinction between reinfection and relapse is practically impossible. Relapses should be suspected in all patients who have a history of malaria. Exposure, strenuous activity, alcoholic indulgence, trauma and surgical procedures frequently precipitate serious recurrences. If fever occurs under these circumstances

1. In emergencies, when atabrine and quinine for parenteral use are not available, quinine sulfate may be given by rectum, using a dose of 1 or 2 Gm. mixed with a starch paste, thin enough to run through a rectal catheter. This route should not be used more than once or twice.

or without other explanation in men in or from endemic areas, malaria should be suspected. If facilities for blood examination are not available, treatment should be instituted without delay. It is desirable, however, to prove the diagnosis, especially when relapses are suspected after a long interval. In a certain proportion of latent cases (but not all) the subcutaneous injection of 0.5 cc. of 1:1,000 solution of epinephrine results in finding parasites in the peripheral blood when they are not otherwise seen. In suitable cases this method may be tried. Routine efforts by this or other means to bring out parasitemia or to precipitate relapses in large groups of men who are free of symptoms are inadvisable.

c. Drug Administration: There is no reason to believe that treatment with atabrine or quinine in the absence of parasitemia and clinical relapse has any influence on the future occurrence of relapses; treatment is not recommended, therefore, for patients who are free of symptoms or those in whose blood parasites are not found. In general, the treatment of relapses should be the same as that of first attacks. Prolongation of maintenance doses of atabrine to a total period of two or three weeks may be tried. In cases of repeated relapses in spite of atabrine therapy, when it is especially desired to try to prevent further relapses, the quinine treatment described in paragraph 5 b may be used and continued with a daily dose of 0.6 Gm. (10 grains) to a total period of three or four weeks; but such instances must be kept to a minimum in order to conserve quinine.

7. *Records, Follow-Up.*—In order to accumulate information which will be of value in determining the efficacy of treatment plans, medical officers responsible for the care of patients with malaria should use a few well defined plans, such as those given in this circular letter. Patients should fall into a few clearcut treatment groups, so that the results can be gathered together from time to time for study. Data should be recorded showing the whole course of the patient's malarial history. Only by means of information which is continuous can the need of prolonged follow-up be met. The following points are illustrative of basic data which are required:

a. Previous History:

(1) Dates of first entry into endemic region and of any subsequent return to an endemic area.

(2) Suppressive treatment at various times: dates, drug, doses, regularity, intermissions.

(3) Clinical attacks: dates; interval following cessation of suppressive treatment; break-through during suppressive treatment; courses of clinical treatment in detail; duration of symptoms; intervals between relapses.

(4) Date of removal from endemic area.

(5) Date of arrival in continental United States.

b. Present attack or relapse:

(1) Diagnosis by smear, including malarial species.

(2) Dates of beginning of symptoms, institution of treatment and cessation of fever.

(3) Rate of disappearance of parasites and date of their final disappearance.

(4) Full clinical notes, including symptomatology and exact plan of drug administration.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. AUSTIN E. SMITH, M.D., Secretary.

THE STATUS OF DICHLOROPHENARSINE HYDROCHLORIDE: TRADE NAMES CLORARSEN, PHENARSINE HYDROCHLORIDE

Since January 1936 the antisyphilitic agent mapharsen has been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies. Mapharsen (Parke, Davis & Co.) is a brand of 3-amino-4-hydroxyphenyl arsine oxide hydrochloride. Reactions following the use of this agent are claimed to be less severe than those observed after the use of arsphenamine and neoarsphenamine.

In recent literature may be found reports of an arsenical antisyphilitic agent which apparently was discovered in the early part of this century but was cast aside as being too toxic for clinical use. Some years later there were published reports on its use in animals and in the treatment of yaws and human syphilis. It was not until 1941 that 3-amino-4-hydroxyphenyl dichloro-arsine hydrochloride was found satisfactory for the treatment of syphilis; apparently the earlier studies were based on the use of an unbuffered compound which would provide a very low *Pa*.

The preparations now available on the market contain sufficient alkaline buffering agent to make neutral a prepared solution for injection. They contain approximately 26 per cent of trivalent arsenic. At least four firms (Abbott Laboratories, Parke, Davis & Company, E. R. Squibb & Sons, Winthrop Chemical Company, Inc.) have been licensed to manufacture and make available for interstate commerce this substance, which is marketed at the moment as Phenarsine Hydrochloride (Winthrop) and Clorarsen (Squibb). The name proposed by the U. S. Pharmacopeia is Dichlorophenarsine Hydrochloride. One firm uses sodium citrate as a buffer, another sodium carbonate. On the addition of sterile distilled water to an ampul containing the mixture of dry dichlorophenarsine hydrochloride and alkaline buffer a reaction takes place with the result that arsenoxide is supposed to be formed. It has been claimed that the latter agent is the therapeutically active part of the compound.

In 1941 the therapeutic possibilities of buffered solution of dichlorophenarsine hydrochloride were presented in a report[1] based on a series of animal experiments and on a clinical study of 171 patients treated over a period of two years. The authors concluded that 3-amino-4-hydroxyphenyl dichloroarsine hydrochloride buffered with sodium citrate is "a safe and effective drug in the treatment of syphilis as judged by (1) rapid production of darkfield negativity of early lesions, (2) prompt healing of early lesions, (3) effectiveness in producing seronegativity in early syphilis, (4) low percentage of relapses, (5) low incidence of abnormal spinal fluids in early syphilis, (6) absence of severe immediate reactions to its administration and relatively low number of reactions in general."

The probable toxicity of the drug was determined by Tompsett and others in mice and rabbits, and no lesions were found in killed animals that could be attributed as due to the toxic effect of the drug. The clinical material for the study consisted of 171 patients: 117 had early, 38 had late latent syphilis, 4 had asymptomatic neurosyphilitic lesions and 12 had various syphilitic lesions. The general scheme of treatment was that of the usual combined bismuth and arsenical treatment except that treatment with the drug under investigation was generally prolonged. Only 1 patient had an infectious relapse. Serologic relapse was not encountered. Gastrointestinal, cutaneous and

1. Tompsett, R. R.; Downs, W. G.; McDermott, Walsh, and Webster, Bruce: The Use of Clorarsen in the Treatment of Syphilis, J. Pharmacol. & Exper. Therap. 73: 412 (Dec.) 1941.

syncope reactions occurred in 51 cases. However, there were no severe immediate reactions. There were no deaths. The gastrointestinal reactions included nausea, vomiting and diarrhea, but rarely was it necessary to discontinue the drug. Fainting shortly after injection of the drug was observed in 4 cases, but in all the agent was well tolerated later. There were no nitritoid reactions. The other reactions included in part exfoliative dermatitis (1), fixed arsenical eruption (1), papular dermatitis (2), pruritus (1), angioneurotic edema (1), chills, fever, headache (2), jaundice (1), generalized pains (1), questionable purpura (1).

Long,[2] in reporting on the use of "phenarsine hydrochloride" in the treatment of 96 patients with syphilis over a period of twenty months, which involved 2,033 injections, declared that the drug results in effects equal to those obtained from any of the arsenicals in general use and the reactions are less frequent and less severe. There were 336 reactions from 2,033 injections; the types of reaction included gastrointestinal (288), headache (4), depression (2), malaise (20), salivation (21) and pruritus (1). Early and late syphilis was treated.

Guy and his co-workers[3] conducted toxicity tests and curative tests on rats and concluded that the results obtained from the use of phenarsine hydrochloride did not differ materially from those obtained with mapharsen. The therapeutic index of both compounds was declared as about 28. Clinically they investigated the drug by administering 2,581 injections to 233 patients. The administration of 1 injection to 4 patients with primary lesions caused the disappearance of spirochetes from the lesions, according to darkfield examinations, within twenty-four hours. Cutaneous manifestations disappeared within an average of fourteen days. As have other investigators, Guy and his co-workers observed mild gastrointestinal upsets. They also experienced one nitritoid reaction and one Herxheimer reaction. Complete blood studies showed no evidence of granulocytopenia or anemia. Routine urinalysis revealed no abnormal urinary findings.

Kampmeier and Henning,[4] reporting their findings on 251 patients, which involved 4,348 doses, evaluated the efficacy of the drug on the rapidity of producing darkfield negativity, the healing of lesions, the reversal of serologic tests and a low frequency of spinal fluid abnormalities. They found that a single therapeutic dose would usually produce darkfield negativity within twenty-four hours, acute lesions healed promptly, and 37 cases of early syphilis presented negative spinal fluids after two or more courses. No serious untoward reactions were encountered; nausea, vomiting and diarrhea were the most common reactions. Some patients who had had untoward reactions with other arsenical preparations were able to tolerate the drug under investigation without reaction.

A confidential report submitted to the Winthrop Chemical Company by a syphilologist in the East presented a study of 282 patients. The total number of injections of "phenarsine hydrochloride" usually administered weekly was 1,340, an average of 4.8 injections per patient. Fifteen patients received bismuth concurrently. The usual dosage for men was 0.06 Gm. and for women 0.04 Gm. Twenty-two previously untreated patients with preliminary or secondary syphilis received injections of "phenarsine hydrochloride" and a bismuth salt. Darkfield examinations of the lesions showed satisfactory responses for the disappearance of the infecting organism. Reactions per thousand injections among the 282 patients provided the following incidence: nausea 42, vomiting 69, diarrhea 19, headache 50, dizziness 10, chill 1, palpitation or mild precordial distress 2, pain in gums 10, sore arm 13, pruritus 18, urticaria 4, dermatitis 2, jaundice 2, agranulocytosis 4. The author stated that the reactions were for the most part of minor significance.

The Council on Pharmacy and Chemistry has had under consideration for some time a brand of dichlorophenarsine hydrochloride. Consideration has not been completed pending the receipt of certain additional information, particularly that relating to stability. The Council has had reason on past occasions to give considerable attention to the stability of certain popular antisyphilitic agents and demands that sufficient evidence be supplied for the brands of dichlorophenarsine hydrochloride before any will be accepted for inclusion in New and Nonofficial Remedies. At present, several interested persons claim that this agent is as stable as or more stable than oxophenarsine hydrochloride, but the Council is withholding its final decision pending the receipt of more evidence. The four firms who are licensed to manufacture dichlorophenarsine hydrochloride were invited to supply evidence regarding stability but to date have not submitted adequate protocols. The National Institute of Health has permitted a dating period of three years for 3-amino-4-hydroxyphenyl dichloroarsine hydrochloride (dichlorophenarsine hydrochloride), an indication that this body has procured evidence of stability which is satisfactory for a definite dating period. However, because the Subcommittee on Venereal Disease of the Committee on Medicine of the National Research Council and the Committee on Drugs and Medical Supplies concurred in a recommendation that the Council be requested to prepare a statement on the status of dichlorophenarsine hydrochloride and oxophenarsine hydrochloride (N. N. R. brand, mapharsen), the Council on the basis of information in the literature and that supplied by the National Research Council and one interested manufacturer adopted for immediate publication this general report and the appended statement of dosage. This statement may have to be revised as experience demands. At present, no brand of dichlorophenarsine hydrochloride stands accepted for inclusion in N. N. R., although the Winthrop Chemical Company has submitted its brand. Another brand which is available in interstate commerce, but which has not been submitted to the Council, is Clorarsen made by E. R. Squibb & Sons.

During its consideration of these agents the Council questioned whether the medical profession will accept, generally, the names Dichlorophenarsine Hydrochloride and Oxophenarsine Hydrochloride, which have been proposed for inclusion in U. S. P. XII, first supplement, as official names for 3-amino-4-hydroxyphenyl dichloroarsine hydrochloride and 3-amino-4-hydroxyphenylarsine oxide hydrochloride respectively, phenarsine hydrochloride having been preempted as the name for a theoretical compound on which will be based new compounds. The Council is of the opinion that other nonproprietary designations might be chosen to advantage, names which would be less conducive to the coining of "tricky" names for sales promotion and which would be easier for the practicing physician to remember. Consideration might be given to applying the name "phenarsine" to the structural unit which has been designated "phenarsine hydrochloride" since the possibility is remote that salts other than the hydrochloride will ever be utilized in the preparation of such compounds. If this should be done, then the compound now designated "oxophenarsine hydrochloride" would become "phenarsine oxide," and the compound now designated "dichlorophenarsine hydrochloride" would become "phenarsine chloride." Or these compounds also might be called oxophenarsine and chlorophenarsine respectively. If Dichlorophenarsine Hydrochloride and Oxophenarsine Hydrochloride are retained as U. S. P. names, it appears not unlikely that the label will stress Dichlorophenarsine and Oxophenarsine with Hydrochloride appearing in smaller letters. Such a procedure, it is understood by the Council, would be acceptable to the National Institute of Health and might offer some aid to the physician.

Dosage.—Initial dose 0.03 Gm. for women and 0.04 Gm. for men intravenously. The second dose may be increased to 0.04 Gm. for women and 0.06 Gm. for men. The maximum dose may be regarded as 0.06 Gm. Injections may be given every four to five days, as it is excreted rapidly.

For children, the initial dose should not exceed 0.0005 Gm. (0.5 mg.) per kilogram of body weight; the later doses should average between 0.0005 and 0.001 Gm. (between 0.5 mg. and 1.0 mg.) per kilogram of body weight.

2. Long, W. E.: Treatment of Syphilis with Phenarsine Hydrochloride, Arch. Dermat. & Syph. **47**: 226 (Feb.) 1943.

3. Guy, W. H.; Goldmann, B. A., and Gannon, G. P.: Phenarsine Hydrochloride in the Treatment of Syphilis, Arch. Dermat. & Syph. **47**: 235 (Feb.) 1943.

4. Kampmeier, R. H., and Henning, H. B.: The Treatment of Syphilis with Clorarsen, Am. J. Syph., Gonor. & Ven. Dis. **27**: 208 (March) 1943.

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SATURDAY, SEPTEMBER 25, 1943

THE QUESTION OF INTRAUTERINE POLIOMYELITIS

Acute poliomyelitis complicating pregnancy is rare. McGoogan [1] collected 5 cases from the literature up to 1931, to which he added 3 additional cases observed in the state of Nebraska during the year 1931. Brahdy and Lenarsky [2] observed 3 instances of pregnancy complicated by poliomyelitis among 1,010 patients with poliomyelitis admitted to the Willard Parker Hospital during 1931. Among these patients were 30 over 19 years of age, of whom 15 were women, and 3 of these developed acute anterior poliomyelitis during pregnancy. Pregnancy and labor in these cases were not affected adversely. In no instance has a mother in whom poliomyelitis developed during pregnancy transmitted the disease to her offspring. Kleinberg and Horwitz [3] present an analysis of 15 cases reported in the literature up to 1941, 1 personal communication and 13 cases which they collected. They conclude that pregnancy complicated by acute anterior poliomyelitis may be anticipated to progress normally, with a normal termination of labor and with normal offspring. The involuntary contractions of the uterus and the ability of the uterus to expel its contents spontaneously, observed also in patients paralyzed by cord tumors, spondylitis and vertebral fracture, are due to the fact that the uterus has an independent nerve supply and will contract not only after the spinal cord is transected but even after its sympathetic nerve supply is extirpated. There was no instance of intrauterine poliomyelitis in the 29 cases reviewed by them. The passive immunity of the offspring derived from the mother does not persist for long, since a number of cases of acute anterior poliomyelitis under the age of 1 month have been reported. Lotti Hürny [4] reports 1 pair of twins and another infant, all 3 full term, delivered by cesarean section from mothers with acute poliomyelitis. The infants were normal and remained so. Both women died a few days after the operation as the result of the ascending paralysis of the Landry type.

In this issue of THE JOURNAL appears a contribution by Harmon and Hoyne,[5] in which the authors report 2 cases of pregnancy complicated by acute anterior poliomyelitis. Their second patient was admitted to the hospital four days after the onset of acute symptoms of poliomyelitis in her eighth month of pregnancy. Labor was induced and a normal viable child delivered. To date, ten months following birth, the child is progressing well and is apparently normal. There is no evidence of paralysis in the child. In their first patient symptoms of the disease developed in the sixth month of pregnancy. A spontaneous delivery of a stillborn fetus took place. The slightly macerated fetus had probably been dead for forty-eight hours or more. Postmortem examination of the child was carried out on the same day as the stillbirth. The spinal cord was removed and preserved in 50 per cent glycerin. Intracerebral inoculation of a Macacus rhesus monkey with the supernatant fluid from the ground emulsion of 0.3 Gm. of the fetal spinal cord was performed after the preservation of the cord at 5 C. for forty days in 50 per cent glycerin. The animal was observed for the ensuing twenty-six days and there were no consistent signs which might be attributable to poliomyelitic infection. On the twenty-sixth day the animal was killed and the cord removed for microscopic study. Sections prepared at four levels of the spinal cord failed to show any lesions characteristic of the disease. An attempted further passage of the latter material into a second monkey produced no symptoms.

There has not been an instance of the development of poliomyelitis in utero in the 34 cases reported. The 4 fetal fatalities in the Kleinberg and Horwitz series were due apparently to prematurity, to partial asphyxiation and probably to poliomyelitic toxemia. There is ample evidence, both clinical and experimental, that when a submicroscopic virus is present in the blood stream this virus can pass through the placenta and infect the fetus. This has been demonstrated for one of the viruses of encephalitis and for the viruses of measles, vaccinia, chickenpox and lymphocytic choriomeningitis. One of the properties of poliomyelitis virus is its ability to migrate along nerve fibers. Successful demonstration of virus in the blood of monkeys infected with poliomyelitis have been comparatively few, either because the virus is present in low concentration or

1. McGoogan, L. S.: Acute Anterior Poliomyelitis Complicating Pregnancy, Am. J. Obst. & Gynec. **24**: 215 (Aug.) 1932.
2. Brahdy, M. B., and Lenarsky, Maurice: Acute Epidemic Poliomyelitis Complicating Pregnancy, J. A. M. A. **101**: 195 (July 15) 1933.
3. Kleinberg, Samuel, and Horwitz, Thomas: The Obstetric Experiences of Women Paralyzed by Acute Anterior Poliomyelitis, Surg., Gynec. & Obst. **72**: 58 (Jan.) 1941.
4. Hürny, von Lotti: Erkrankt das Kind bei Graviditäts-Poliomyelitis? Schweiz. med. Wchnschr. **72**: 1417 (Dec. 19) 1942.
5. Harmon, P. H., and Hoyne, Archibald: Poliomyelitis and Pregnancy, this issue, p. 185.

not at all. Gordon and Lennette [6] performed in monkeys repeated intranasal inoculation of virus after destruction of their olfactory bulbs. The inoculation did not result in a clinical attack of poliomyelitis, in the appearance of virus in the blood or in a detectable immunologic response. Apparently there was no absorption of virus by the blood stream. In the light of our present knowledge of the mode of spread of the virus of poliomyelitis, one may conclude that the failure of the disease to develop in the fetus of a mother with acute poliomyelitis is due to the low concentration of the virus in the blood stream or to its absence.

MALARIA

Most physicians during recent years have given little attention to malaria. Their attitudes have reflected the steadily diminishing incidence of indigenous malaria in the United States. However, circumstances associated with the war have checked this apathy and have brought a realization of the many problems which malaria still presents, particularly in the tropics. The experimental study of human infections has been retarded by the high host specificity of their parasites; this has prevented transmission to laboratory animals. As a consequence analogous parasites of birds, and more recently of mammals, have been extensively utilized for laboratory studies. The value as well as the limitations of such parasites is exemplified by the work which led to Ross's fundamental discovery of the transmission of one species of avian parasite by a culicine mosquito and of his failure to infect mosquitoes of this group with human parasites. He did not achieve success in infection of mosquitoes with the human parasites until the "dapple winged" mosquitoes which we now recognize as anophelines were employed. The details of this relationship were later elucidated by Grassi. Thus, early in the experimental study of malaria the limitations of the interpretation of the human infection in terms of phenomena observed in the analogous infections of lower animals became manifest. Observations with apparent implications for human infections must always be confirmed with human parasites in the human host before their medical significance can be considered established.

An approach to the problems of malaria on more significant levels was opened when Warrington Yorke and S. P. James recognized that the malaria therapy of neurosyphilis, particularly that naturally induced by the employment of infected anophelines, offered many opportunities for investigation. A productive program has been sponsored for several years by the Florida State Board of Health and the Florida State Hospital with the financial support of the Rockefeller Foundation. Boyd and his associates have contributed materially to enlarge our knowledge of the malarias as self-limited infections.

Boyd [1] has shown that the white patients inoculated have not been a homogeneous group from the point of view of their susceptibility to vivax malaria. Those patients who experienced clinical attacks of from two to twelve weeks' duration, with a gradually declining parasitemia, are regarded as having been in a condition of pristine susceptibility at the time of inoculation. In these persons high densities of parasites prevail for some weeks after spontaneous subsidence of the paroxysms; the decline and disappearance of parasites is gradual. In a second group similar densities of parasites are attained at a similarly early period, and the paroxysms are of equal severity with those observed in the first groups, but after a period of clinical activity usually lasting not over two weeks the attack terminates abruptly, coincident with a rapid and spontaneous decline in the parasitemia. Such patients evidently had an autochthonously acquired immunity to a heterologous strain of the vivax parasite, which soon becomes activated and capably deals with the new infection. In a third group the initial rise in the parasitemia is similarly checked, before clinical manifestations recur. Such patients have a potent immunity homologous to the strain employed in the induced inoculation. This homologous immunity may persist for several years, even in the apparent absence of a latent infection.[2]

The development of immunity is first manifested by the acquirement of a tolerance to the presence of the parasites. Whereas in the case of fully susceptible persons clinical activity is frequently initiated with densities of parasites of 10 per cubic millimeter or even lower,[3] when clinical activity spontaneously ceases several weeks later densities of several thousand parasites per cubic millimeter still prevail. When the parasitemia finally disappears the defense mechanism has become fully activated, so that large numbers of homologous parasites may be rapidly removed if suddenly introduced.[4]

The demonstration that this acquired immunity is highly potent against the homologous parasites led to attempts at the hyperimmunization of convalescents by repeated reinoculations with the homologous parasite. Patients so treated apparently acquired an ability to remove promptly, without clinical reaction, doses of over 8 billion trophozoites introduced intravenously.

6. Gordon, F. B., and Lennette, E. H.: The Blood Stream in Experimental Poliomyelitis, J. Infect. Dis. **64**: 97 (March-April) 1939.

1. Boyd, Mark F.: Criteria of Immunity and Susceptibility in Naturally Induced Vivax Malaria Infections, Am. J. Trop. Med. **22**: 217 (May) 1942.

2. Boyd, Mark F.; Stratman-Thomas, W. K., and Kitchen, S. F.: Duration of Acquired Homologous Immunity to Plasmodium Vivax, Am. J. Trop. Med. **16**: 311 (May) 1936. Boyd, Mark F., and Mathews, C. B.: Further Observations on the Duration of Immunity to the Homologous Strain of Plasmodium Vivax, ibid. **19**: 63 (Jan.) 1939. Boyd and Kitchen.[2]

3. Boyd, Mark F.: The Threshold of Parasite Density in Relation to Clinical Activity in Primary Infections with Plasmodium Vivax, Am. J. Trop. Med. **18**: 497 (Sept.) 1938.

4. Boyd, Mark F., and Kitchen, S. F.: Attempts to Hyperimmunize Convalescents from Vivax Malaria, Am. J. Trop. Med. **23**: 209 (March) 1943.

However, the transfer of 500 cc. quantities of blood from such effectively hyperimmunized patients to a patient who had been inoculated with the homologous strain and another experiencing an active clinical attack from the same did not in the one case prevent a take or in the other produce any observable alteration in the course of the infection.[4]

While vivax infections are usually benign and readily interrupted therapeutically, physician and patient are frequently perplexed by the recurrence of clinical activity after remissions of from six to eighteen months' duration.[5] Such recurrences are not observed in persons whose attack was induced by inoculation with infected blood [6] or following natural inoculation when there has been no therapeutic interference with the evolution of the primary attack.[7] Furthermore, the former infections are readily sterilized by a few small doses of plasmodicidal drugs [8] while the latter, as already mentioned, frequently recur after repeated courses of treatment. Thus it would appear that the trophozoites are fully vulnerable to plasmodicidal drugs and are not present in situations inaccessible to drugs dissolved in the plasma. Since the clinical attacks following either method of inoculation appear essentially similar,[6] it would appear likely that the variation is attributable to differences in the character of the inoculum, i. e. trophozoites vs. sporozoites. For many years Schaudinn's report of having observed sporozoites penetrate erythrocytes and transform into trophozoites was generally accepted. If this observation is true, the differences between artificially and naturally induced infections just described should not be expected. However, Schaudinn's report has not been confirmed. Further important points of difference between the infections resulting from the two methods of inoculation are that (*a*) by the administration of massive doses of trophozoites both the incubation and the prepatent period may be suppressed,[6] while heavy doses of sporozoites will not effect a suppression of these intervals; (*b*) the blood is immediately infectious following inoculation by trophozoites,[9] but following inoculation by sporozoites it appears to be free from parasites for nearly a week,[10] and (*c*) available drugs are not reliable causal prophylactics, i. e., will not prevent the contraction of infection from the bites of infected mosquitoes. These differences suggest that the sporozoites do not enter erythrocytes to become transformed into trophozoites and that there probably is an intermediate stage in the development of the parasite which is not passed in the erythrocytes. Exoerythrocytic stages are observed at various periods in the evolution of certain of the avian malaria infections. It seems not unlikely that something analogous occurs in the human infections induced by sporozoites and either that parasites in such a stage are protected from the drugs or that they are more resistant to parasiticidal drugs. When a new infection is interrupted by the early initiation of treatment shortly after the onset, not all the postulated intermediate stages have as yet completed their development and discharged their complement of trophozoites; belated parasites in this stage are not killed but perhaps are narcotized. It is likely that the induced remission will persist as long as the narcosis continues, but, if the effect is dissipated before immunity develops, further clinical activity is likely when the narcosis wears off and more trophozoites are produced. Until some drug is discovered which will attack the parasites while in this situation, the likelihood of vivax recurrences is probably enhanced rather than diminished by the early initiation of treatment.

5. Boyd, Mark F., and Kitchen, S. F.: Recurring Clinical Activity in Infections with the McCoy Strain of Plasmodium Vivax, Am. J. Trop. Med. **17**: 833 (Nov.) 1937; Vernal Vivax Activity in Persons Simultaneously Inoculated with Plasmodium Vivax and Plasmodium Falciparum, ibid. **18**: 505 (Sept.) 1938.

6. Boyd, Mark F.: Some Characteristics of Artificially Induced Vivax Malaria, Am. J. Trop. Med. **20**: 269 (March) 1940.

7. Boyd, Mark F., and Coggeshall, L. T.: A Résumé of Studies on the Host-Parasite Relations in Malaria, Acta Conventus Tertii de Tropicis atque Malaria Morbis, Amsterdam, 1939, part 2, p. 292.

8. Boyd, Mark F.: Therapeutic Interruption of Artificially Induced Malaria Infections, Am. J. Trop. Med. **23**: 49 (Jan.) 1943.

9. Boyd, Mark F., and Kitchen, S. F.: Efficiency of the Homologous Properties of Acquired Immunity to Plasmodium Vivax, Am. J. Trop. Med. **16**: 447 (July) 1936.

10. Boyd, Mark F., and Stratman-Thomas, W. K.: Observations on Inoculation and Onset: Studies on Benign Tertian Malaria, Am. J. Hyg. **20**: 488 (Sept.) 1934.

ARTIFICIAL BLOOD GROUP A SPECIFIC ANTIGEN

Morgan [1] of the Lister Institute, London, has reported synthesis of an artificial antigen capable of stimulating the production of exceptionally high titer specific agglutinins and hemolysins for group A human erythrocytes.

About twenty-five years ago the theory of the production of antigens was broadened to include relatively simple organic compounds which in themselves are incapable of stimulating the in vivo production of specific antibodies. These are generally known as "partial antigens," "haptens" or "specificity determinants," since they can be raised to full antigenicity by conjugation with proteins or other colloidal "carriers." Thus combined they stimulate the in vivo production of polyvalent (or multiple) antibodies giving specific precipitin reactions with the resulting protein-hapten complex. One successful application of this technic is the conversion of bacterial polysaccharides into hapten-protein complexes which induce the formation of polysaccharide specific antibodies. Less well known is the preparation of successful antigenic conjugates with such complex haptens as agar and acacia.[2]

1. Morgan, W. T. J.: Brit. J. Exper. Path. **24**: 41 (April) 1943.

2. Partridge, S. M., and Morgan, W. T. J.: Chem. Ind. **59**: 849, 1940; Brit. J. Exper. Path. **23**: 84 (April) 1942.

The earlier hapten-protein conjugates were made by complex chemical processes. These were found to be inapplicable to many haptens since they led to partial or complete hapten denaturation. A more simple technic was therefore developed by the London biochemists involving the use of self-conjugating somatic proteins of the Shiga bacillus. A simple mixture of bacterial or vegetable polysaccharide with Shiga protein in saline solution often led to the formation of a stable polysaccharide-protein complex. The Shiga conjugates were found to be more highly antigenic than the earlier conjugates with relatively inert serum proteins. The Shiga complex is readily precipitated with the corresponding antiserum and gives positive complement fixation reactions and lethal anaphylaxis in hapten-sensitized guinea pigs.

The Shiga technic has been applied to the haptens which determine human blood grouping. Human blood group hapten A, for example, is present in commercial pepsin, in peptone and in hog gastric mucin. This hapten is a polysaccharide-amino acid compound which in itself does not stimulate the formation of anti A agglutinins in laboratory animals. Hapten A, however, is able to inhibit the agglutinating action of human anti A agglutinin on human group A erythrocytes in extremely small amounts. To raise this hapten to full antigenicity the gastric mucin polysaccharide and Shiga protein were mixed in the same saline solution and the reaction adjusted to p_H 4.5 by the addition of acetic acid. The resulting precipitate was repeatedly washed by centrifugation. Rabbits whose tissues are free from A antigen were injected intravenously at three to four day intervals with the hapten-Shiga precipitate. From seven to nine days after the sixth intravenous injection antiserums were drawn from these rabbits. These antiserums would often agglutinate human group A erythrocytes in dilutions as high as 1:32,000. There was no agglutination in control tests with B or O group human erythrocytes. Positive reactions, however, were given at a somewhat lower titer with human A_2, A_3, A_1B, A_2B and A_3B erythrocytes. The anti A rabbit serum is strongly lytic for sheep erythrocytes in the presence of complement. This hemolysis is inhibited by the blood group A polysaccharide. Attempts at passive sensitization of guinea pigs were unsuccessful, presumably because of the presence of Forssman antigen in guinea pig tissues.

As a practical application of his results Morgan suggests the substitution of his high titer anti A rabbit antiserum for the human alpha agglutinin currently used. Such a substitution would lead to the ready detection of weakly reacting human erythrocytes such as A_2B, A_3 and A_3B, which are at present readily overlooked. Attempts are now being made to prepare an equally potent anti B antiserum by conjugating B polysaccharide of human saliva with Shiga protein. The possibility of improving current antipneumococcus vaccines by a similar conjugation is also under investigation.

Current Comment

TOXICITY OF CHLORINATED HYDROCARBONS

Chlor compounds of the petroleum series have a wide use as degreasers of metal, cleansers of textiles, dry cleansers, solvents for rubber and other industrial uses. They are as a group not inflammable and have strong solvent properties. Hamilton [1] divides them into three groups: the saturated (paraffin) group such as methane and ethane, the unsaturated olefins such as ethylene and propylene and the naphthalenes. Methyl chloride, carbon tetrachloride, ethylene dichloride, acetylene tetrachloride and acetylene trichloride are industrially the most important. Tetrachlorethane, the common name for acetylene tetrachloride, is the most toxic of the chlorinated hydrocarbons that have been used in industry. All the substances, however, have some toxicity; Dr. Hamilton emphasizes that the increasing use of heat in connection with their industrial employment, as for example in degreasing with vapors of trichlorethylene or carbon tetrachloride, is far more dangerous than was the earlier method of dipping the material in cold fluid. If such vapors come in contact with a naked flame or with hot metal pipes, decomposition may take place with the formation of the highly toxic gas phosgene. Cases of poisoning with especially rapid development and great severity after brief exposure have most often arisen following the use of carbon tetrachloride fire extinguishers in a confined place. This summary of the toxicity of the chlorinated hydrocarbons parallels that by von Oettingen [2] of the aliphatic and aromatic hydrocarbons, including benzine and the more toxic benzene.

INDIVIDUAL SUSCEPTIBILITY TO DENTAL CARIES

The causes of dental caries remain obscure. In a recent study of this subject, Gore [1] concludes that the food impaction theory of Miller fails to explain individual susceptibility to caries and the mechanism by which the various types of decalcification of the enamel are produced. The chemical changes in the saliva following changes in diet seem to Gore to offer a more likely explanation. Salivary currents and the physical characteristics of the spontaneously precipitated mucin in the stagnant saliva, Gore says, play an important part in localizing to specific areas of the enamel the acid formed by hydrolysis and fermentation of the carbohydrate radical in mucin.

1. Hamilton, Alice: The Toxicity of the Chlorinated Hydrocarbons, Yale J. Biol. & Med. **15**: 787 (July) 1943.
2. von Oettingen, W. F.: The Toxicity and Potential Dangers of Aliphatic and Aromatic Hydrocarbons, Yale J. Biol. & Med. **15**: 167 (Dec.) 1942.
1. Gore, J. T.: Individual Susceptibility to Dental Caries, J. Am. Dent. A. **30**: 1018 (July) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

DOCTOR SHORTAGE AND CIVILIAN HEALTH IN WARTIME

Following is a comprehensive report prepared by the Office of War Information. The data are secured from the United States Public Health Service, the War Manpower Commission and the Federal Works Agency.

CIVILIAN HEALTH

1. Statistics of the Public Health Service show the lowest death rate on record, 10.3 per thousand, for 1942. The birth rate has risen from 18.7 per thousand in 1941 to 20.7 in 1942, and the maternal mortality rate has dropped for the thirteenth consecutive year and for 1942 was about 3 deaths per thousand live births. Infant mortality also continued to drop, falling 4 per thousand to 40 or 41 per thousand live births. The general death rate is a little less favorable so far this year.

2. Statistics on a sampling of workers, concerning sickness which caused absences of longer than eight days, show an increased number of man-days lost, especially from respiratory sickness. However, according to the Industrial Hygiene Division of the United States Public Health Service this increase is not greater than was expected from the strain of wartime living and working conditions.

3. The 1942 and more recent reports on communicable diseases, perhaps not the best gage of adult health, show a mixed tendency. Influenza and typhoid, normally danger points under war conditions, were in 1942 below the peacetime average. Infantile paralysis and meningococcic meningitis (cerebrospinal fever) showed sharp increases this year. There have been flareups of smallpox and sporadic outbreaks of food poisoning and dysenteries. Strenuous efforts are being made to control the traditional wartime upturn of venereal diseases and tuberculosis deaths. The latter has not yet begun to show in health records.

SHORTAGE OF DOCTORS

The shortage of doctors for civilian practice will continue to increase indefinitely unless the requirements of the armed forces are revised. This arises, first, from the fact that the armed forces have commissioned to date only a little more than 80 per cent of their stated needs and are continuing to withdraw physicians from civilian practice; secondly, from the fact that 80 per cent of all new medical graduates will be commissioned.

There is no guaranty that a full 20 per cent of these graduates will remain for civilian work. Even if the 1,500 represented by this percentage should remain they would supply only about half the replacement needed in peacetime since, on the average, 2,500 to 3,000 doctors die annually.

Although it is logical to expect a greater number of deaths in war years from the strains of overwork, there is no evidence of this to date.

To compensate for this shortage the Public Health Service and the Procurement and Assignment Service of the War Manpower Commission are making all possible efforts to achieve the optimum distribution of the doctors remaining for civilian practice, to minimize needs by extensive preventive work and increase of medical care facilities.

These things are being accomplished by:

1. Making surveys to show where needs are acute.

2. Seeking to shift physicians from relatively well supplied areas to those where the ratio of doctors to population is substandard. As of August 1 a total of 1,469 doctors was reported relocated, 52 per cent to congested areas; dentists relocated totaled 72.

3. Limiting recruitment to twenty states and the District of Columbia, which are relatively well supplied; removal of physicians from substandard areas is minimized.

4. Helping local authorities to organize cooperative use of doctors and facilities for greater efficiency wherever consent can be obtained.

5. Improving and increasing hospital and clinical facilities. New facilities, largely financed under the Lanham act administered by the Federal Works Agency, include 44 health centers completed and 153 hospitals constructed or building. As of June 30, 1943 recommended hospital construction on 451 projects had been approved by the President.

6. Continuing attempts to improve sanitary conditions (300 water supply projects at a total cost of $81,000,000 finished in congested areas under the Federal Works Agency) and by Public Health Service emergency work in control of diseases (700 additional professional and more than 3,000 nonprofessional personnel assigned to local health department work, malaria control, endemic typhus, industrial hygiene and so on).

7. Extensive work to control the spread of venereal diseases by breaking up districts of prostitution near industrial and military centers, by army prophylaxis work, by establishing treatment centers where infected women can be cured of syphilis and gonorrhea through the new rapid treatment technics and an attempt made to rehabilitate them.

8. Widespread case finding work in tuberculosis through the new inexpensive x-ray traveling units set up by the Public Health Service under Dr. Herman E. Hilleboe, capable of checking on 20,000 persons a week.

Dr. Thomas Parran, Surgeon General of the United States Public Health Service, estimates on the basis of surveys made by his field units, in cooperation with the Procurement and Assignment Service of the War Manpower Commission, that 332 known localities will need about 500 doctors and dentists in the next fourteen months. However, he adds that such needs actually become acute long before they find their way into formal reports.

Dr. Joseph W. Mountin, Assistant Surgeon General, summarizes the overall statistical picture this way: "There was a prewar registry of 180,000 registered physicians listed in the United States. Of these, 15,000 were full time employees of public health agencies, medical schools, insurance companies, etc.; 28,000 were more than 65 years old and evaluated as only one-third effective; 7,000 under 65 were completely or partially ineffective; 3,000 were residents in hospitals, and 42,000 were in the armed forces, as of Jan. 1, 1943." These figures show, as of the first of this year, 95,000 fully effective doctors available for civilian practice, plus a percentage of service from some 32,000 others partly incapacitated by reason of age or other factors.

During 1943, 11,000 of the 95,000 fully effective doctors were to be taken into the armed services, making a total of 53,000 physicians allotted to the care of sickness and injuries for an army estimated at 10,800,000 men when fully enlisted. This leaves 84,000 physicians, surgeons, specialists and general practitioners—plus 15,000 public health doctors, plus 5,000 interns and 3,000 residents, a total of 108,000, to care for the nation's remaining 120,800,000 civilians. These are the figures of the Procurement and Assignment Service.

It is estimated that, assuming perfect distribution, there would thus be 1 effective doctor for every 1,118 persons or, in general practice, a ratio of 1 to 1,557. This is very close to the ratio of 1:1,500 "considered desirable from the standpoint

of health protection." But perfect distribution does not exist for many reasons and, short of compulsory shifts of doctors to critical localities, is not attainable.

Dr. Mountin has stated that, "in general, no military or industrial community should have less than a ratio of 1 physician to 3,000 population if its citizens are to have even a fair standard of care." However, the end point of the induction of civilian doctors into the armed services is in sight. The Army and Navy training program, when it becomes fully effective in 1944, will take care of all further needs for professional personnel. The first full class will be available in September 1944.

If this were the complete picture, relocation of doctors and other remedial measures might be expected eventually to rectify the situation. But another factor operates to cause a continuing and increasing shortage of doctors. This is the ordinary attrition of death which, even in peacetime, removes between 2,500 and 3,000 doctors annually from their practice. It is expected that wartime strains, overwork and the return to practice of overage and retired physicians will increase this annual loss. Replacements will not be available unless there is an alteration of the plan to induct 80 per cent of new medical graduates into the armed forces. These number about 5,000 every nine months because of the speeded up schedule for training, or an average of 7,000 a year. Of these it is estimated there would be only 1,500 to replace the 2,500 to 3,000 doctors who die yearly.

Everything possible is being done to assure the best possible distribution of the remaining physicians. Doctors are to be taken into the armed services only from those twenty states, plus the District of Columbia, which show the most favorable ratio between doctors and population. None are to be taken from fifteen specified states in which influx of workers has made shortage of medical care critical. States from which doctors are not to be taken are Alabama, Arizona, Delaware, Georgia, Idaho, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, South Carolina, Tennessee, Texas, West Virginia and Wyoming.

Dr. Frank H. Lahey, chairman of the Directing Board, Procurement and Assignment Service, has reported a total of 1,469 doctors and 72 dentists relocated. Some of the shifts of doctors from one locality to another were arranged by the commission, others resulted from work by other agencies, and still others were unsolicited movements. Of these, 389 were relocated in the states listed which have an unfavorable doctor to population ratio. Alabama reported 76, Arizona 27, Georgia 17, Idaho 2, Kentucky 93, New Mexico 2, North Carolina 7, South Carolina 23, Tennessee 39, Texas 87, West Virginia 13, Wyoming 3. Of the 1,469 doctors, 604 were relocated before January 1. An examination of the records on these showed 52 per cent moved into congested areas of the type in which doctor shortages have chiefly developed. Twenty per cent went into towns with populations between 5,000 and 25,000. Comparison with the joint surveys made by the United States Public Health Service and the Procurement and Assignment Service of the War Manpower Commission shows that among those communities where shortages were found 24.4 per cent have received at least one additional doctor.

One of the basic problems of relocations is the difficulty of licensure. Of the 604 doctors checked, 154 had crossed the state line barrier and, in a majority of cases, this entailed taking a new medical examination. These ordinarily are given only once or twice a year, but some states, recognizing the critical nature of the problem, have given as many as six. Only seven states have laws permitting temporary licensure. These are Delaware, Maine, Nevada, Pennsylvania, Washington, New York and Montana. One state, Florida, permits out of state doctors to practice there under supervision of the state medical director of civilian defense. Procurement and Assignment estimates that nineteen other states have laws making a similar arrangement possible, but Florida alone is exercising the privilege.

Recently the War Manpower Commission's Procurement and Assignment Service endeavored to place some foreign doctors who have been licensed by the state of New York. These doctors had not yet been in this country long enough to become citizens, but all had their first papers. The service found that ...ne states had medical license reciprocity with New York, but none of these states could, by law, admit the foreign doctors. Four of these nine states require that doctors be citizens; the laws of another group of four forbid acceptance of graduates of foreign schools; the ninth requires that graduates of foreign schools have further education in the United States.

Analysis of state licensure requirements, as applied to foreign doctors and listed by the State Board Number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for 1942, shows that twenty-eight states require full citizenship as a preliminary to practice and fourteen require first papers only. Those requiring full citizenship are Alabama, Arkansas, Delaware, Georgia, Idaho, Iowa, Kansas, Kentucky, Maine, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, Texas, Utah, Vermont, Virginia, West Virginia and Wyoming, plus Alaska, Hawaii and Puerto Rico. Those requiring only first papers are Colorado, Connecticut, Illinois, Louisiana, Maryland, Massachusetts, Nevada, New Mexico, New York, Pennsylvania, Rhode Island, South Dakota, Washington and Wisconsin. However, of those states that require only first papers, Louisiana withholds permanent license until citizenship is completed. Many states exempt Canadians from these requirements.

Many other states will not accept doctors who do not have American medical degrees, and these include Arizona, Arkansas, Colorado, Illinois, Kansas, Kentucky, Maryland, Minnesota, Mississippi, Nevada, New Hampshire, New Mexico, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Washington, West Virginia, Wisconsin and Hawaii.

This pool of foreign doctors is estimated to contain 6,000 variously qualified physicians. According to figures given by Harry D. Beale of the National Center for Resettlement of Foreign Physicians, 2,000 of these men have become United States citizens and many of them, who have taken out only first papers, have been licensed to practice medicine in this country. Between 3,000 and 3,500 have been licensed in New York, 400 in Massachusetts, 150 in Ohio, 250 in California, 250 in New Jersey, 100 in Connecticut and 100 in Maryland. Only 50 of these men have been taken into the Army, which has stringent regulations about their employment. Doctors taken into the Army must be American citizens and must undergo rigid scrutiny for reasons of security.

Seven or eight foreign doctors are being used in California, which, previous to the present crisis, had set up a physicians' service, sponsored by the state medical association, to care for migrant farm workers who flooded the state during the dust bowl era. This service now has shifted its attention to the federal projects housing industrial workers.

It was pointed out that these foreign doctors constitute our largest available reserve of physicians and that, in another respect, they fit well into the present medical care crisis. Officials estimate that fully half of these doctors will return to Europe after the war and thus, if they fill in where current needs are acute, will not remain after the war to displace men returning from the armed services.

The ease or difficulty with which out of state doctors are admitted to practice depends largely on local licensure. Where the need is recognized, ways are found to permit doctors to enter and relieve the critical shortages which government surveys have shown to exist. Occasionally local physicians, not realizing the need, have not cooperated. However, this situation seems to be changing, and there have been a number of cases of doctors and medical associations reversing their previous opposition on condition that those doctors who enter their bailiwick do so only for the duration of the war.

It is stated that of the 45,000 or more doctors inducted into the armed services 1,500 have been released to civilian practice again and presumably must be replaced. Three hundred were discharged between January 1941 and April 1942. Since that time, and up until May 1943, 1,200 others had been released.

Letters were written to 260 of these doctors in an effort to determine whether any were available for relocation. Of those who replied, by far the major portion had returned to their original practice and only 2 per cent of the whole number were

willing to shift to a different locality. Some of them were incapacitated physically, but most were perfectly capable of carrying on civilian practice.

HEALTH FACILITIES

Another attack being made on the problem of decreased medical care for the civilian population is an extensive enlargement of hospital and sanitation facilities. Most of these are financed under the Lanham act by the Federal Works Agency. As of July 31, 1943 the FWA lists 33 new hospitals as wholly or substantially completed, at an estimated cost of $4,265,513, of which the government allotted $3,481,435. These 33 hospitals will supply an additional 1,615 beds for civilian care. Those hospitals for which funds have been allotted—including some under construction, some on which contracts have been awarded and some on which bids have been asked—total 250 and will cost $53,451,136, of which the government is paying $44,702,052. These hospitals will supply an additional 13,827 beds for civilian care. Health centers are smaller projects, usually providing clinics and sometimes 6 to 8 emergency beds. Construction of these projects is financed with federal and local funds and operation is by local authorities. Of such projects 44 had been completed as of June 15, 1943. Other projects financed through the Federal Works Agency as War Public Works and Services, including a great number already finished, and others approved by the President, as of June 30, 1943, include those listed in table 1.

TABLE 1.—*War Public Works and Services*

Type of Project	Number of Projects	Estimated Total Cost	Federal Funds
Total *	3,874	$431,109,670	$302,979,098
Schools †	1,883	162,298,620	77,818,220
Medical (hospitals, venereal disease hospitals and health centers)	489	72,385,054	62,845,973
Water	205	83,066,215	69,301,301
Sewerage; sanitation	236	47,975,331	40,802,529
Recreation	692	30,002,941	29,636,402
Power	10	20,515,509	12,019,716
Fire, police	121	5,877,655	5,144,295
Streets, highways	37	3,880,143	3,051,807
Other ‡	42	6,908,122	4,356,855

* Includes $26,134,370 transferred by warrant to agencies outside FWA as follows: (A) WPW: schools, 37, $6,791,432; medical, 1, $151,000; water, $735,100; recreation, 269, $18,169,758; and fire and police, 3, $28,250; and (B) WPS: $257,830.

† Includes nursery schools and child care facilities.

‡ Garbage disposal, miscellaneous utilities and so on.

A further report from the Public Health Service shows that the PHS has recommended 451 health centers and hospital projects, through surveys made by its reconnaissance units. As of Feb. 15, 1943, 358 had been recommended and approved, and 153 had been constructed or were building.

The Federal Works Agency, under the Lanham act, also finances an extensive child care program and rehabilitation work in venereal disease rapid treatment centers under the direction of Miss Florence Ken.

Other government agencies are also making a vigorous attack on the problem of shortages. In areas where army camps have many civilian workers and where local medical facilities and doctors are lacking, the Army may request that the section be declared a "remote area." If this is done, the civilian workers may receive care through military facilities on a fee basis. The Army has pending, at present, requests to have ten such areas declared remote. In one such area, civilian employees number more than 7,000 and have no health protection other than could be provided in this way.

Medical care is reaching out into the sea lanes also, and for the first time in history merchant seamen will have health facilities aboard ship. Today pharmacist's mates are being assigned to merchant vessels carrying cargo to battle lines all over the world. In addition, merchant seamen suffering the strains of enemy attack—war neurosis or combat fatigue—are being treated and rehabilitated through a program sponsored by the War Shipping Administration and the Public Health Service.

In the volunteer civilian services, additional work to relieve shortages also is being done. The Red Cross nurse's aide program, which seeks only to take the strain off graduate nurses by performing minor parts of their tasks, has a total of 85,679 such volunteer workers who have completed the required courses. The last survey showed that during a period of a month about 80 per cent of the trained workers were active. Maximum cooperation of the volunteer workers was obtained, according to the Red Cross, where the hospitals made a serious effort to work the volunteers into their routine.

TABLE 2.—*Joint Survey of Pascagoula, Miss., Made on Jan. 5, 1943*

Population of Pascagoula and Moss Point area in 1940	9,000
Population at time of survey	20,000
Number of practicing physicians in area in 1940	9
Number of effective practicing physicians at time of survey, including one over 70 years of age	8
Ratio of physicians to population in 1940	1 to 1,000
Ratio of physicians to population at time of survey	1 to 2,750

HEALTH SURVEYS

No program of stretching health facilities and medical care could operate efficiently without fact finding surveys. The Public Health Service, in cooperation with the Procurement and Assignment Service of the War Manpower Commission and local authorities, is conducting continuous investigations in congested areas to determine their precise needs.

On March 1, 1943, according to the Public Health Service, joint studies had been made of thirty-three communities in sixteen states. The investigating agencies are unanimously agreed that there is urgent need in twenty of these communities for additional medical, dental and nursing personnel. Such surveys are made whenever local authorities or federal agencies direct attention to community problems and are carried forward as rapidly as the number of workers will permit.

Two such surveys are summarized in tables 2 and 3.

The Pascagoula and Moss Point region is a vital war area the population of which is mainly employed in shipbuilding. It is estimated that by June 1943 the population will be 42,000 because of completion of new housing projects. Local and federal surveyors agreed that 4 additional physicians were urgently needed if suffering and actual loss of life are to be avoided. The ratio of physicians to population was put at approximately 1 to 3,500 in June 1943. By March 1, 1943 state and local groups had induced 2 additional physicians to locate in Pascagoula.

Orange County has three important shipyards, working on a twenty-four hour basis. The estimated population of war housing projects is 27,200. The survey group agreed that 2 additional physicians and 1 dentist should locate in Orange. The report recommends that 1 additional physician trained in public health be assigned to the Orange Health Center. It was also recommended that the 3 doctors employed at the Consolidated Steel Company yards obtain authorization to enter into private practice during their off hours.

TABLE 3.—*Joint Study of Orange County, Texas, Made on Feb. 22, 1943*

Population of Orange county, 1940	17,333
Population of Orange county, February 1943	62,000
Number of physicians, 1940	9
Number of practicing physicians, February 1943	12
Ratio of physicians to population, 1940	1 to 1,925
Ratio of practicing physicians to population, February 1943	1 to 5,000

Reports on other surveys by these same services were made available to the Office of War Information. Names of localities are withheld because the reports are confidential and the instances given are used as samples rather than specific cases. Abstracts follow:

In one Southern seacoast city, as the result of an influx of workers for war work the population has increased from 25,000 to an estimated 70,000 in three years. The survey showed that this area has only 14 effective physicians and 4 dentists. Each doctor had 20 to 40 patients daily at his offices and was able to make only 3 or 4 home calls a week. There are records

of people rising from the sick bed, dressing and going to a doctor's office to wait several hours for treatment. Some doctors refused night calls, others sent emergency cases to the hospital, where there was no intern and where it would be necessary for the patient to wait until a doctor could go there. It was necessary to wait three and a half to four months for a dental appointment. This survey showed that there was still a housing shortage, that there was an inadequate number of food stores, that restaurants were not only few but overcrowded and poor, and that laundry services were inadequate. Under these conditions the survey group was not surprised to find that daily absenteeism at the war factories ran as high as 11 to 16 per cent and that the labor turnover was extremely heavy. There was a record that of 818 employees hired by one concern 566 either had been fired or had left the company's employ.

The surveyors held the threat of epidemic to be serious; not only that there was danger of epidemic in such crowded and below standard conditions but that, should an epidemic break out, the doctors would be totally unable to cope with the situation, both because of their small numbers and because of the inadequacy of hospital facilities.

The only hospital for this community of 70,000 persons contained 68 beds, of which 18 were reserved (in the basement) for Negroes. Since Negro doctors were not allowed to use hospital facilities, these beds were not often filled. On July 1 a new wing was started for this hospital, which will contain 30 beds when completed. Nurses' quarters are to be built, thus releasing 35 more beds in the hospital proper.

As a result of the survey the shipyards hired a physician and assigned him to a housing project as a practitioner. The doctor in charge at the shipyard wishes to hire 3 more. The survey also succeeded in having a community council set up to handle the problem. An intern was hired for the hospital. An army doctor nearby, whose duties required only about one hour daily, has sought permission to help.

Another survey was made in January 1943 of an Alabama community whose population in three years had jumped from 13,171 to an estimated 25,000, plus an estimated 10,000 additional newcomers in the county; 11,800 workers are employed making munitions. To take care of this population there are 10 effective white doctors. No hospital is available for Negroes, who comprise 26 per cent of the population. In the county there are 4 effective doctors, though 7 practice there. Four doctors were taken from this community by the armed services, and 3 others have died. No new doctors have entered. The picture resolves itself into 21 effective doctors, making a ratio of 1:3,800, far above the critical ratio of 1:3,000 and more than double the desirable ratio of 1:1,500. Another hospital is urgently needed, as well as 2 to 7 new doctors, 1 of whom should be an obstetrician.

In a survey of another Southern community made at approximately the same time an even more serious situation was found. This community, a county which included three towns, showed an increase of population from 51,842 to about 75,000 within three years. (Estimates of increased population are approximately accurate, being based chiefly on the issuance of ration books). The population of one town had increased 200 per cent, another more than 100 per cent and a third had risen from 515 persons to 5,000. There are two ordnance plants in the county, employing 15,000 persons. The ratio of doctors to population in the county is 1:3,600. Two doctors have been taken by the armed services. The ordnance plants have a total of 10 or 11 doctors, who do not practice in the community. One of the towns in this county has a new health center with 6 beds and almost enough equipment for obstetrics and general surgery. There has been some discussion of its use as a maternity center, but nothing has been done. An allotment of $106,000 has been approved for an 80 bed hospital with quarters for 22 nurses. Recommendations were made that the hospital construction be hurried, that the ordnance plant doctors be made available for emergency use, that there be no further drafting of doctors from this community, that the health center be used as a maternity center, that funds be found for its equipment from federal sources, that public health nurse services help the doctors, and that 2 doctors, at least 1 a Negro, be sent to the community.

Norfolk, Va., and its sister cities about Hampton Roads form one of the critical areas of the Eastern Seaboard. Here a large new water supply has been brought in, financed under the Federal Works Agency, and approval of priorities is sought for a new privately financed hospital. The population has risen from 251,318 to an estimated 460,260. The survey shows that 15 doctors are needed, as well as 16 dentists and 5 public health nurses. In Norfolk the doctors and the medical association will welcome assistance and new doctors, but the reaction of physicians in other localities is by no means uniform. In one area doctors opposed the building of a health center because, they said, it pointed the way toward "socialization of medicine." They also opposed free immunization of industrial workers by public health officials, saying that the workers were amply able to pay for injections, vaccination and so on.

In a Southern seaport and shipbuilding center a resurvey is in progress. Here the doctors formerly were opposed to the introduction of any new physicians unless they were uniformed men sent in temporarily and resisted any idea of liberalizing the licensing system. If a state health officer asked for uniformed doctors the Public Health Service would be unable to supply them because it does not have sufficient funds for the purpose.

PREVENTION

Another extensive phase of the fight to preserve civilian health falls in the division of prevention: professional and popular education in public health methods, maintenance of healthful and sanitary conditions, and work to arrest the spread of preventable diseases.

Industrial.—The Public Health Service's Division of Industrial Hygiene, operating through thirty-eight state and eight local bureaus, has one of the largest single undertakings in civilian health. It has direct and indirect supervision over the working and living conditions of an estimated 30,000,000 workers. This force is divided, 22,000,000 working on arms, ship building, munitions and construction and 8,000,000 on transportation, public utilities, food processing and farms. The Industrial Hygiene Division's work was intensified by the fact that, up until 1943, 73 per cent of war contracts had been awarded to factories in twenty big centers which had 22 per cent of the total population of the country. A further complication was the construction of war plants in rural communities which lacked even rudimentary sanitary facilities and the fact that the ranks of state and local public health workers were depleted, showing a shortage, as of February 1942, of 1,000 doctors and 2,700 public health nurses.

The Division of Industrial Hygiene increased its workers to 300 and gave special training to 60. Through this force the division, in cooperation with local and state authorities, maintains almost constant surveys of factory health conditions, keeps up continuous laboratory work for elimination of industrial hazards, sponsors educational campaigns on hygiene and nutrition and keeps continually before management the advantages of having medical supervision in their shops.

The latest available survey of industrial hygiene services in plants employing almost a million and a half workers showed, as of 1939, that 15.1 per cent of the workers were supplied with hospital facilities, 15.5 with full time doctors, 33⅓ with full time nurses and 47.5 with a trained first aid worker. Because of the huge influx of new workers, these figures may have fallen off slightly. However, there was an increase of 10 per cent last year in industrial employment of public health nurses and also a definite increase in interest, among physicians and communities, in industrial hygiene. Many institutes (four or five day series of lectures) have been held throughout the country to establish what the Public Health Service refers to as the "framework" of industrial hygiene. This "framework," which the national service urges on state and local authorities, places strong emphasis on preplacement examination, not only to put every available man and woman to work, but also for the purpose of placing handicapped or less sound workers in those jobs for which they are best suited. Other features of the "framework" stress the medical setup in the plant, supervision over machine safeguards, ventilation and lighting, sanitation and recreation facilities, and better health in the homes including recreation and housing. It was pointed out in this

connection that 90 per cent of all sickness absences are caused by nonindustrial sickness and accident.

In addition to plant surveys by local and state officials, federal workers make frequent field trips. The Public Health Service is directly responsible with the Surgeon General of the Army for supervision in government-owned industry; its work in other fields is on the basis of requests from management or labor in industry or of cooperation with local health authorities. These field trips have covered many ideal factory setups but also many where the most rudimentary safeguards for workers' health did not exist. In a factory which made rubber rafts for planes, a field worker found a turnover of 25 per cent in employees in one particular section where cement was brushed on seams. The odor of the chemicals used was stifling, and it was clear that headaches and similar ill results from the fumes were unavoidable. The factory had provided the required exhaust ventilation, sucking out the fumes through a grid which also formed the work bench on which the chemicals were spread on the rubber. It had neglected to teach the workers that, in spreading the chemical, they must not put it on the grid. Consequently the grid was clogged and the ventilation system was not functioning properly.

In another factory, where bullets were made, the machinery was old, ill lighted, and without the most elementary safeguards. On the other hand, this factory employed a full time public health nurse who was doing splendid work. This woman had returned to her home town with a sense of mission and had sold her services to the factory on a part time basis, the understanding being that she would work half time on the assembly line. After two months of this work the management realized the value of her work and put her on a full time basis as a nurse. A factory whose workmen became caked with dust provided only pails of water for them to wash in at quitting time. A West Coast shipyard, whose payroll had increased from 500 to 5,000 men, had provided no additional toilet facilities and no additional sewage disposal. The water supply was contaminated and several hundren cases of dysentery occurred before the condition was corrected. It was emphasized that these cases were by no means typical of all factories, but that they did represent a measurable percentage of those inspected.

Tuberculosis.—The work of detecting tuberculosis in its early stages is considered extremely important. According to Surgeon General Parran the death rate from tuberculosis increased 13 per cent in Great Britain after two years of war. There has been no increase here as yet, but the objective circumstances favoring such an increase are prevalent. These include overcrowding and longer hours of work, with resulting fatigue and emotional strain.

Educational work to encourage proper eating, personal hygiene and rest is being done by the Public Health Service, chiefly by distribution of literature and consultation or organizational work with local and state health authorities. But the main reliance is placed on x-ray diagnosis. To this end the Office of Tuberculosis Control was set up under Dr. Hilleboe. Ten portable x-ray units were obtained and set up in trailer-automobile units, staffed with three workers, a doctor, an x-ray technician and a clerk. The cost of the x-ray units is about $5,000, of the trailer $1,200. With these units, in cooperation with industry in congested areas, a quarter of a million persons were x-rayed in 1942. These include 160,000 workers in nine states and 40,000 federal employees in the District of Columbia. An additional ten units were purchased, but failure to obtain an expanded appropriation for this year's work permitted the Public Health Service to place only two of these in operation. Two are being held in reserve and the remaining six will be lent to states where they will have the maximum utility. Dr. Hilleboe expects by these units to x-ray a million persons this year at a unit cost of about 15 cents per examination, and he has requests for work which would include another million whom he is unable to examine because of lack of funds. The present rate of work for each mobile unit is about 2,000 x-ray examinations a week. These units utilize an inexpensive microfilm technic and new equipment which permits taking as many as 300 to 500 photofluorograms in a normal eight hour day.

Venereal Diseases.—Another of the danger points in communicable disease where prevention plays an important role is syphilis and gonorrhea. A rise in venereal diseases traditionally accompanies war, and England has experienced an increase of 70 per cent. In this country an increase of 20 per cent in patients treated at public clinics has already occurred. The Public Health Service conjectures that a great portion of this apparent rise may be due to an increase in serologic tests and augmented case finding throughout the country. It is estimated the 30,000,000 such tests will be made in 1943. Districts of prostitution have been closed in three hundred communities, and it has been found necessary in only two areas to invoke the stringent May Act, which makes prostitution a federal offense in districts designated by the Secretaries of the Navy and of War. These two areas include twenty-seven counties in Tennessee and twelve counties in North Carolina. Venereal clinics have been increased by 300 per cent since 1938. Nearly 10,600,000 syphilis treatments were given last year by public health doctors, an increase of 200 per cent over 1938.

A further extensive work to curb venereal infection is going forward swiftly, financed jointly by the Lanham act and Public Health Service funds. Kapid treatment centers have been established for the treatment and rehabilitation of infected prostitutes. Twenty-nine such centers have been opened in fifteen states, Puerto Rico, the Virgin Islands, the District of Columbia and the Canal Zone. Eleven more centers have been approved, six others recommended and awaiting approval, and twenty are being considered. The twenty-nine centers already functioning have a capacity of 3,400 beds and are kept constantly supplied with patients through arrests and commitments by state and local officers. Turnover is on an approximate maximum basis of six weeks per patient. Treatment is primarily by the new intensive methods for syphilis and the use of sulfonamide drugs for gonorrhea. These faster methods of treating syphilis vary in length from one day to six weeks. Intensive treatment is said to give great promise and may supplant the classic treatment which required some seventy injections spread over a period of eighteen months or more. Sulfonamide drugs permit a cure of 80 to 90 per cent of gonorrhea patients in a week's time. In addition to health treatments, extensive educational and rehabilitory work is done at these centers, and it is hoped that many of the girls and women will find their way into more normal life through wartime jobs.

Typhus.—Despite preventive work, typhus, spread in this country by the rat flea, was contiquing to increase in 1942, when 3,700 cases were reported, a rise of 1,000 over the previous year. It is believed that the actual incidence of the disease is several times as great as the number of cases reported. Typhus has been gradually spreading northward along the East Coast and along the granary lines in the Middle West. The principal foci of infection are in Texas and Georgia. The way to stamp out typhus is to kill its host, the rat. Buildings in centers of infection are being rat proofed and the rats destroyed, a district at a time, whenever local authorities will assume responsibility for continuing the work. The Public Health Service has set up a field office for typhus control with headquarters in Atlanta. A field officer carrying out control work reported 231 rats killed by a single fumigation in one small grocery, plus an uncounted number of others gassed in their burrows. Twelve persons employed in that store had been infected with typhus in the two previous years.

Malaria.—Extensive work in malaria control has been done in the last two years, and $6,000,000 is to be spent on such work in the coming year. Today a protected zone is being created around every war industry and every military camp in the malaria belt. These projects have employed 3,700 men to protect 1,161 war establishments in eighteen states. As an index of the effectiveness of this work, the Army experienced the lowest malaria rate in its history in continental United States, 0.6 per thousand men in 1942. So far this year the rate is 0.7.

Considerable work is being done also in the Western states in control of bubonic plague, which is endemic there among wild rodents. Areas surrounding military camps are cleaned up, and there is a continual sampling of rats in urban communities along

the West Coast. In the last year plague was found among rats in two communities, one on Puget Sound, the other near San Francisco. Immediate action to exterminate rats resulted in cleaning up the areas, and recent examinations have shown no traces of the plague.

Diseases from other parts of the world unknown in this country are being guarded against also. Such exotic diseases may gain a foothold unless preventive measures are taken. Global warfare, which breaks down national barriers and makes worldwide communication easy, also opens a path for invading disease germs via plane and ocean vessel passengers and returning troops. Two examples of such exotic diseases—not yet successful invaders—are filariasis, a disease of the lymph glands transmitted by mosquitoes, and schistosomiasis, an intestinal infection prevalent in Africa, Central and North America and the West Indies, transmitted by snails. Mosquitoes and snails of the United States therefore are being studied to determine whether they might become carriers of these possible invaders.

Because of the possibility of aircraft transporting insect carriers of plague, yellow fever, typhus and other infectious diseases, all planes from foreign ports are fumigated twice—once before arrival by flight personnel, and on arrival by the Public Health Service. New ocean vessels constructed for our wartime merchant marine incorporate Public Health Service ratproofing specifications. Ratproofing, incidentally, saves money and time. It saves steel during construction and saves dollars and hours after construction owing to the fact that ratproofed ships seldom require fumigation.

NAVY

MEDICAL FIELD PHOTOGRAPHIC UNITS

The Secretary of the Navy, Frank Knox, has authorized the Bureau of Medicine and Surgery to organize and equip two medical field photographic units for the purpose of obtaining documentary clinical photographic records of the medical and surgical management of naval casualties in the combat areas. One unit will be assigned to the Pacific area, the other to the Atlantic European area.

The fundamental plan is to secure a coordinated series of motion and still pictures illustrating war injuries, using individual case histories as far as practicable and following them from the field of combat along the chain of evacuation to final destination. In addition to case history reports, a photographic record will be made of environmental conditions wherever pertinent and necessary so as to familiarize medical personnel with the problems to be encountered. In addition to war casualties the units will be concerned with disease problems, particularly tropical diseases.

The Division of Preventive Medicine, which will have direct cognizance of this work, will appreciate comments and suggestions from officers in the bureau as to suitable material and locations for such medical field photography.

LIEUT. COMDR. CHARLES E. BALDREE JR. CITED

Lieut. Comdr. Charles E. Baldree Jr. (MC), U.S.N.R., formerly of Belleville, Ill., has been cited for "splendid service" to wounded Americans evacuated to his ship. The citation came from Lieut. Gen. S. B. Buckner Jr., who is commanding general of all U. S. forces in the Alaska area where Dr. Baldree is stationed. The citation reads as follows:

"Reports have reached me from several sources concerning the splendid service rendered by you to U. S. Army troops wounded at Attu and evacuated to your ship. Your untiring efforts and professional skill greatly alleviated the suffering of our troops during their trying voyage.

"I wish to convey my appreciation of your magnificent work and trust we may be so fortunate as to have the benefit of your services again in this theater."

Dr. Baldree, who graduated from the University of Tennessee College of Medicine in 1928, entered military service in August 1942.

NAVY CROSS AWARDED TO DR. RINGNESS

Lieut. Henry R. Ringness (MC), U. S. Navy, has been awarded the Navy Cross posthumously for extraordinary heroism while under fire on Guadalcanal. Lieutenant Ringness, who died of wounds sustained in the action in which he earned his decoration, graduated from George Washington University School of Medicine, Washington, D. C., in 1939. The citation accompanying Lieutenant Ringness's award is as follows: "For extraordinary heroism as flight surgeon of a marine aircraft group during action against enemy Japanese forces on Guadalcanal on the night of Oct. 13-14, 1942. When a hostile task force moved in off our beachhead and commenced a vigorous bombardment of the island airfield, Lieutenant Ringness, trapped in a foxhole in the camp area by the sporadic bursting of shells, was mortally wounded by a near miss which killed four of his companions and wounded others. Although completely paralyzed in the lower half of his body and suffering great pain because of his immobility, he persisted in administering morphine and blood plasma to wounded personnel until he was finally evacuated to a base hospital. Even then, with unselfish devotion to his fellow man, he tried to minimize his own critical condition in order that others might be given preference in medical treatment. Three days later, as a result of his injuries, he gallantly gave up his life in performance of duty in service to his country."

WOMEN OFFICERS' UNIFORMS

According to the *Army and Navy Journal* of September 4, women physicians commissioned for service in the Medical Corps of the Navy, or any other women in the U. S. Naval Reserve who may be appointed as officers in Navy staff corps, will wear the basic uniform originally adopted for the Women's Reserve, U. S. Naval Reserve. The special types of staff corps service will be indicated by the appropriate corps insignia worn above the sleeve stripe and, when the uniform jacket is removed, by the miniature collar device.

The staff corps device shall be of the same color as the sleeve stripes prescribed for the navy women's uniform—reserve blue on the navy blue uniform and navy blue on the white uniform. The acorn, where used on staff corps insignia, will be embroidered in appropriate contrasting color of either white or reserve blue.

In addition to the medical corps, women are now serving in the hospital corps, supply corps and civil engineer corps and will wear the appropriate corps devices.

NAVY PERSONALS

Capt. Robert P. Parsons (MC), U. S. Navy, who has recently returned from command of a naval hospital in the South Pacific area, has been assigned to command a new naval hospital at Pleasanton, Calif., which will be completed on October 1.

Comdr. Richard J. S. Silvis, U. S. Navy, has been appointed medical officer at the air station's Naval Air Technical Training Center, succeeding Comdr. M. J. Tendler. Commander Silvis reported to the training center after sixteen months of sea duty aboard the U. S. S. *Charger*, an auxiliary aircraft carrier. He has been in the regular navy since his graduation from the University of Nebraska College of Medicine, Omaha, in 1931.

Lieut. Col. James E. Peterman, M. C., A. U. S., formerly district health officer with the Pennsylvania Department of Health, has recently been transferred from the office of the Surgeon General, Washington, D. C., to foreign service, where he will serve as vital statistician for one of our overseas forces.

MISCELLANEOUS

MORE REGISTERED NURSES NEEDED

The Directing Board of the War Manpower Commission's Procurement and Assignment Service announced on September 1 that the nation is faced with a critical shortage of registered nurses. More than one fifth of all the active nurses in the country are with the armed forces and an equal number must be recruited to meet Army and Navy needs between now and next July. There is in addition, it was stated, a serious shortage of nurses in many hospitals and elsewhere where their services are vital in meeting the health needs of the civilian population.

The wholehearted cooperation of each member of the nursing profession and of all those who employ nurses—hospitals, industrial and business firms, physicians and the general public—will be necessary if these shortages of nurses are to be surmounted, the Directing Board said.

The cooperation of all nurses, both active and retired, will be particularly required by the new Nursing Division of the Procurement and Assignment Service. This division will (1) determine the availability for military service or essentiality for civilian service of all nurses eligible for military service and submit such determinations to the American Red Cross for use in procurement of nurses for the armed forces, (2) promote plans for maximum utilization of full time nurses and those who are able to serve only part time, (3) develop and maintain a roster of all graduate registered nurses and (4) develop and encourage sound methods of supplementing the work of nurses with nonprofessional personnel.

To meet the serious discrepancy between supply and demand for nursing service, five overall steps are being undertaken. First, the requirements necessary to provide proper nursing care for those in the armed forces have priority over all others. They must and will be met, the Directing Board said. More than 36,000 nurses now are with the armed forces, and the American Red Cross, which is the recruiting agency for the armed forces, will recruit another 36,000 between now and June 30, 1944 in cooperation with the Nursing Division of the Procurement and Assignment Service.

Second, concerted effort will be made this fall to bring back into active nursing the thousands of registered nurses who have left the profession because of marriage or to enter other occupations.

Third, to fill still further the gap between the supply of, and civilian needs for, nursing services, more Red Cross nurse's aides are being recruited to augment the 72,960 certified and the 100,000 enrolled in classes on June 1. These aides supplement the work of and help relieve the burden of those nurses who are serving their country in the less spectacular role of hospital duty.

Fourth, an educational program is being designed to bring about a better conservation and utilization of nurses.

The fifth step aims at meeting the nation's increasing need for nurses. The new Division of Nurse Education of the United States Public Health Service has set a goal of 65,000 new students in schools of nursing, to be recruited this year for the U. S. Cadet Nursing Corps, which was established by the recently enacted Bolton-Bailey Act. Under the provisions of this act, assistance also will be given to those retired registered nurses who will require refresher courses before reentering service.

HOSPITALS FAIL TO RETURN QUESTIONNAIRES

Many hospitals have not returned the questionnaire recently sent out by the Procurement and Assignment Service. If this questionnaire is not returned immediately, hospitals will have to be appraised on the basis of old information and therefore will not receive as satisfactory allocation of house staff. Prompt returns are imperative.

PUBLIC HEALTH UNDER HITLER

According to *Dagens Nyheter*, July 21, TT reports from Oslo that epidemics are spreading so quickly in Norway that hospitals can no longer receive scarlatina patients, who must in future be isolated at home. Medicinal-direktor Dr. T. Ostrem has emphasized that hospitals are to accept only patients who are seriously ill with scarlet fever.

Novo Vreme, July 10, reports that all doctors and hospital attendants born between 1903 and 1911 and hitherto unmobilized are ordered to report for mobilization.

According to *De Tijd*, June 30, the Central Press Service of the NAF has announced that Dutch women working in Germany have now become eligible for maternity allowances. At the birth of a child they will get free nursing and also an allowance if the birth takes place in Holland. In addition they will also get a maternity allowance, beginning six weeks before the probable date of confinement and ending six weeks after the birth of the child. This allowance will be based on the average weekly wage earned during the last thirteen weeks but will not be less than 13 reichsmarks daily. Expectant mothers may not be dismissed during pregnancy, unless they agree, in which case they will lose these benefits. Six weeks before confinement they must request to be relieved of all work, and they will not accept any work during the six weeks following confinement.

An underground hospital for several hundred patients has, on the initiative of the Red Cross, been built close to a Berlin hospital as better protection for sick persons from air attacks, according to Transocean, July 13. As soon as the alert is given, all patients of the hospital will be taken to these shelters, which are equipped with a modern operating room. In order to be prepared for every emergency, night operations will henceforth be exclusively carried out in this operating shelter. Sterile material for seventy operations will constantly be kept in readiness. An x-ray department is available. This underground hospital will also serve as protection for pregnant women. Ventilation and electric lighting have been installed. The walls are covered with luminous paint, enabling the nurses to carry out the most urgent duties even if the electric lighting should break down.

As a result of many cases of infantile paralysis at Montlucon and vicinity the prefect of the Allier has forbidden all meetings in the town and district, Radio Paris, July 8, reports. Not only cinemas and theatrical productions have been suspended but all festivals, presentations of prizes, political reunions and baby shows. The Montlucon arrondissement has been barred to holiday makers and campers.

According to *Arbetaren*, Stockholm, July 21, a violent epidemic of diphtheria is raging in Narvik with numerous deaths. A Baptist church and a large private building which have been converted into hospitals to receive those who are infected are already crowded. Twenty persons have been found to have spread the infection without being ill themselves.

V 19

ORGANIZATION SECTION

OFFICIAL NOTES

POSTWAR PLANNING FOR MEDICAL SERVICES

The Committee on Postwar Medical Service met in Chicago on June 5, 1943. There were present,

representing the American Medical Association,

Brigadier General Fred W. Rankin
Rear Admiral Dallas G. Sutton
Dr. James E. Paullin
Dr. H. H. Shoulders
Dr. Alan Gregg
Dr. Warren F. Draper
Dr. Roger I. Lee

representing the American College of Surgeons,

Dr. Irvin Abell
Dr. Evarts A. Graham
Dr. Arthur W. Allen
Dr. James M. Mason
Dr. Elmer L. Henderson

representing the American College of Physicians,

Dr. James E. Paullin
Dr. Ernest E. Irons

and by request Dr. Morris Fishbein and for a short time Dr. Olin West.

The discussion was largely exploratory. It was the sense of the meeting that, as there are many organizations for postwar planning, it might be well to assemble and maintain a current list of these different organizations and of their activities. It was pointed out that this committee, as a medical and professional committee, at this time was not related to other postwar planning organizations, although such relationships might come later. It was pointed out that "postwar" was an indefinite term and should be perhaps taken in the broader sense, perhaps "ten years after the actual cessation of hostilities." Dr. Paullin felt that this committee ought to be ready to appoint other subcommittees either on request or in anticipation of request on such general topics as

1. Nutrition
2. Infectious Diseases
3. Child Welfare
4. Maternal Welfare
5. Mental Welfare and perhaps others.

TRENDS IN MEDICAL SERVICE

There was considerable discussion, rather general, about the trends of medical service. It was pointed out that the rural areas would be an increasing problem for medical service and that probably the Public Health Service would have wider activities in the future than in the past. The general problem of district hospitals was discussed, particularly in its relation to medical service in rural areas.

RELOCATION OF PHYSICIANS

It was agreed that relocation of physicians would very likely represent a tremendous problem. Some of the young physicians would have had inadequate internships. There would seem to be a large demand for residencies and for opportunities in which returning physicians could make a transition from the army pay to some sort of an assured income without too great an interruption and without the necessity, perhaps, of slowly building a practice by the old method.

POSTGRADUATE EDUCATION

The necessity of postgraduate education was stressed. It was pointed out that there was a committee already vigorously at work on graduate training in the armed forces and likely the same committee, or a continuing committee, might function after the war. It was pointed out that postwar graduate training would probably not be restricted to the Americas on account of the situation in nearly all of Europe. A suggestion was made that the American embassies might have an educational attaché just the same as they have a naval and military attaché.

In the problem of the continuing program of medical education, it was felt that research must play a large part. It was also pointed out that presumably many of these doctors would need reeducation in the doctor-patient relationships. Very likely the Public Health Service would play a large part in the accelerated redistribution of physicians, unless the process was very slow.

It was agreed that this committee of the American Medical Association, appointed by the Trustees, ought to have the authorization of the House of Delegates of the American Medical Association. [This authorization was given by the House of Delegates at the meeting of the House of Delegates which took place a few days later.—ED.]

CURRENT SITUATION

During the interval since the first meeting, events have moved rapidly. At the moment the emphasis seems to rest on finding a peace that will be permanent. However, as the country approaches the end of the second year of actual conflict more and more civilian doctors have joined the armed forces. The duration of internship will likely be shortened to nine months. Medical schools have soldier and sailor students, and the coming winter will bring many troubles to civilian communities shorn of their doctors, and to understaffed medical schools and hospitals. Medical research except as related to the war effort has disappeared. Many doctors have now been in the armed forces over a year, a goodly number for two years and some for three years.

The following problems seem pressing for consideration:

1. Relocation or redistribution of physicians returning from the armed forces. This will entail the setting up of some form of information center and clearing house.

2. Cooperation in planning or advising in such governmental plans for postwar vocational training periods which affect physicians and medical students and which are now being actively discussed.

3. Graduate and postgraduate medical education for the returning physicians.

4. Organization of plans by which the younger men especially may complete internship and residencies and by which residencies and specialist training may be made available.

5. Plans for the educational rehabilitation in medicine through all gradations of a varying number of individuals of those countries whose medical systems have been largely eliminated in the last few years. Obviously this will depend on many conditions now unknown. But the rehabilitation of systems of medical service and medical education for medical practice may well be both tremendous and lengthy.

6. There are, of course, other problems, some of which may seem to the committee to be more urgent than the ones listed. In any event, it seems essential to begin consideration of these problems.

7. A proposal has been made that the committee consider the inclusion in a subcommittee of representatives of the younger group of medical officers of the Army and Navy.

8. The committee should consider also the sending of a questionnaire to a sampling of medical officers of the Army and Navy as to their desires and needs as related to the problems of education, internships, residencies, relocation, salaried positions and similar aspects of postwar rehabilitation.

[Another meeting is scheduled for the near future.—ED.]

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education and public health.)

CALIFORNIA

Physicians Needed.—The Los Angeles County Civil Service Commission announces examinations for the positions of physician, M.D., head anesthetist and chief physician, M.D. (tuberculosis), in the Los Angeles County Department of Charities, which includes the Los Angeles County Hospital, Rancho Los Amigos, Hondo, and Olive Sanatorium, Olive View. Physicians interested in any of these positions should write to the office of the commission, Room 102, Hall of Records, Los Angeles 12, for full information. Applications must be filed on or before October 22 for the physician and anesthetist positions and by September 30 for the chief physician position.

Lectures on the Heart.—Under the auspices of the California Heart Association Dr. Tinsley R. Harrison, professor of medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C., will deliver a series of lectures in San Francisco November 4-6, Los Angeles November 11-12 and San Diego November 9. His subjects will include "The Abuse of Rest in the Treatment of Cardiovascular Disease," "Gastrointestinal Disorders Simulating Angina Pectoris," "Some Conditions Commonly Confused with Coronary Thrombosis" and "Some Common Errors in the Interpretation of Electrocardiograms as Indicating Coronary Artery Disease." The program will also include a clinical pathologic conference.

DISTRICT OF COLUMBIA

Annual Scientific Assembly.—"Medical Progress Since Pearl Harbor" is the theme of the fifteenth annual scientific assembly of the Medical Society of the District of Columbia, to be held at the Mayflower Hotel, Washington, September 30-October 2. Among the speakers will be:

Colonel Raymond E. Scott, M. R. C., U. S. Army, Treatment of Injuries in Combat Zone.
Capt. Camille M. Shaar (MC), U. S. Navy, Treatment After Evacuation from Combat Zones.
Capt. Winchell M. Craig (MC), U. S. Naval Reserve, Injuries of the Head.
Major Brian B. Blades, M. R. C., U. S. Army, Injuries of the Chest.
Comdr. Louis E. Gilje (MC), U. S. Navy, Injuries of the Abdomen.
Col. Lloyd G. Lewis, M. C., A. U. S., Injuries of the Genitourinary Tract.
Dr. Robert V. Funsten, Charlottesville, Va., Injuries of Bones and Joints.
Dr. Claude C. Coleman, Richmond, Va., Neurovascular Lesions of Extremities.
Dr. Robert H. Ivy, Philadelphia, Plastic Surgery.
Major Gen. Norman T. Kirk, surgeon general of the U. S. Army, Sulfonamides in Prevention and Treatment of Wound Infection.
Colonel Roy D. Halloran, M. C., A. U. S., Neuropsychiatric Problems in the Army.
Major Murray Sanders, M. C., A. U. S., Epidemic Keratoconjunctivitis.
Dr. Edward A. Cafritz, Washington, D. C., War on Appendicitis.
Dr. Henry W. Cave, New York, Sulfonamides in the Preparation and Care of Patients for Intestinal Operations.
Lieut. Col. Thomas B. Turner, M. C., A. U. S., Present Day Management of Venereal Diseases in the Armed Services.
Dr. Andrew C. Ivy, Bethesda, Md., Cirrhosis of the Liver.
Dr. Thomas Parran, surgeon general of the U. S. Public Health Service, Pandemic Influenza.
Dr. Jesse G. M. Bullowa, New York, The Pneumonias.
Lieut. Col. Baldwin H. E. W. Lucke, M. R. C., U. S. Army, The Renal Lesions of the Crush Syndrome and Other Forms of Hemoglobinuric Nephrosis.
Capt. Emanuel B. Schoenbach, M. C., A. U. S., Meningitis—Its Diagnosis and Treatment.
Capt. Juanita Redmond, N. C., U. S. Army, Nursing Experiences on Bataan.
Dr. Rolla E. Dyer, Bethesda, Endemic and Epidemic Disease, Including Tropical Diseases.
Philip Drinker, Ch.E., Boston, Medical Service in Industry.
Dr. Warfield T. Longcope, Baltimore, Civilian Medical Practice.
Dr. Harvey B. Stone, Baltimore, Civilian Surgical Practice.
Dr. Malcolm T. MacEachern, Chicago, Hospital and Administrative Problems.
Dr. Arthur C. Christie, Washington, Misleading Concepts Arising from Mobilization.
Dr. Oscar B. Hunter, Washington, Blood Transfusions with Special Reference to Reactions and the Rh Factor.
Dr. John B. Alsever, surgeon, U. S. Public Health Service Reserve, The Current Status of Blood Substitutes.
Lieut. Col. Aubrey O. Hampton, M. C., A. U. S., Recent Advances in X-Rays.
Comdr. Omar J. Brown (MC), U. S. Navy, Malaria—Its Control and Treatment.
Read Admiral Ross T. McIntire, surgeon general of the Navy, Problems of Postwar Medicine.
Brig. Gen. Albert W. Kenner, M. C., U. S. Army, Medical Experiences in Army Warfare.

Guest speakers at special luncheon sessions will include Major Margaret D. Craighill, M. C., A. U. S., on "Women in the Army Medical Department," September 30; Dr. Jui Heng Liu, former minister of public health for the government of China, "Medical Progress in China," October 1, and Mr. Edward T. Folliard, journalist and radio commentator of Washington, D. C., "What is Happening to Our World," October 2.

ILLINOIS

Rocky Mountain Spotted Fever.—The state laboratory has confirmed diagnosis of a case of Rocky Mountain spotted fever near Chester. The patient was a 12 year old boy.

Dr. Sievers Named Assistant State Health Director.—Dr. Jerome J. Sievers, assistant to the chief of the division of communicable diseases, Illinois Department of Public Health, Springfield, has been appointed assistant state health director. The appointment became effective on September 1. Dr. Sievers, who graduated at the University of Illinois College of Medicine in 1935, received his M.S.Ph. degree at the University of Michigan in 1939. He has been connected with the Illinois department of health since 1939.

Grant to Study Penicillin.—The University of Illinois has accepted a grant of $25,000 a year for three years from the Upjohn Company of Kalamazoo, Mich., for the academic study of the structural composition and possible synthesis of penicillin. The grant provides for an enlarged three year research chemistry project under the direction of Herbert E. Carter, Ph.D., in the department of biochemistry at Urbana, amplifying both an earlier cooperative research project at the school and the bacteriologic and other research now being conducted at the Upjohn Company's laboratories at Kalamazoo.

Chicago

Personal.—Lola Armstrong Ponton, executive secretary of the Illinois Association for the Crippled since it was organized, has resigned.——At the recent annual meeting of the Illinois Psychiatric Society Dr. Clarence A. Neymann was chosen president. Other officers include Drs. Hugh T. Carmichael, vice president, and Frances Hannett, secretary-treasurer, all of Chicago.

Rongetti Seeks to Have License Restored.—Amante Rongetti, under charges in the Cook County Court of practicing medicine without a license, filed a petition in superior court on August 18 for a writ of mandamus to compel Frank G. Thompson, Mount Vernon, Ill., director of the state department of registration and education, to expunge an order of May 4, 1932 which revoked his license, newspapers reported. He was said to have charged that the action was unconstitutional and that the order was issued without due process of law.

William Hamlin Wilder Memorial Foundation Created.—The Institute of Medicine of Chicago announces the establishment of the William Hamlin Wilder Memorial Foundation, which has been made possible through a gift from Mrs. Wilder. Dr. Wilder was professor emeritus of ophthalmology at Rush Medical College at the time of his death in 1935. He was a founder fellow of the Institute of Medicine and a former member of its board of governors. The first lecture under this foundation will be delivered by his son, Dr. Russell M. Wilder, chief, Civilian Food Requirements Branch, War Food Administration, Washington, D. C., who will speak on "Nutrition and the Human Eye" on the last evening of the two day postgraduate assembly on Nutrition in Wartime sponsored by the Institute of Medicine to be held at the Palmer House, November 17-18.

KENTUCKY

State Medical Meeting.—The annual session of the Kentucky State Medical Association will be held in the Brown Hotel, Louisville, October 5-6. The program has been contributed by wartime graduate medical meetings under the auspices of the American Medical Association, the American College of Physicians and the American College of Surgeons. Among the speakers will be:

Lieut. Col. Claude S. Beck, M. C., A. U. S., Burns.
Dr. Eugene A. Stead Jr., Atlanta, Ga., Shock.
Dr. Roy R. Kracke, Emory University, Ga., Blood Derivatives.
Brig. Gen. Fred W. Rankin M. R. C., and Lieut. Col. Burr N. Carter, M. C., A. U. S., Current Trends in Military Surgery.
Dr. Charles B. Stacy, Pineville, Medical Problems in Kentucky.
Dr. Jacob A. Bargen, Rochester, Minn., Chemotherapy in Digestive Organs.
Dr. Alexander E. Brown, Rochester, Chemotherapy: (a) In Genitourinary Infections and (b) General Consideration.

Dr. Herman L. Kretschmer, Chicago, President-Elect of the American Medical Association, Medical and Surgical Diseases of the Prostate Gland.
Brig. Gen. David N. W. Grant, M. C., U. S. Army, We Are Not Content.
Dr. Ben Wilson Smack, Louisville, Where To, Surgery?
Dr. Edward L. Turner, Nashville, Tenn., Classification of Dysenteries.
Dr. Arthur W. Allen, Boston, Thrombophlebitis and Pulmonary Embolism.

On Wednesday a symposium on general surgery will be presented by Dr. Allen on "Gastric and Duodenal Ulcers: Surgical Management" and "Neurovascular Lesions of the Extremities," and Dr. Warren H. Cole, Chicago, "Gas Gangrene" and "Intestinal Obstruction."

MASSACHUSETTS

Tufts Announces Change in Program for Anniversary Celebration.—On September 22 Col. Raymond W. Bliss, assistant to the surgeon general of the U. S. Army, will discuss "Plans and Operations of the Surgeon General's Office" in connection with the fiftieth anniversary celebration of Tufts College Medical School, Boston, September 15-October 6. Portraits of Drs. Timothy Leary and Cadis Phipps, professor emeritus of pathology and professor of medicine, respectively, will be presented during the exercises on September 29. These dates differ from those announced previously by Dr. Harry Blotner, Boston, secretary of the Tufts Medical Alumni Association (THE JOURNAL, September 11, p. 103). On October 6 the anniversary celebration will conclude with a meeting in the John Hancock Hall at which Dr. Alonzo K. Paine, Boston, president, Tufts Medical Alumni Association, will preside. The speakers will include:

Karl T. Compton, LL.D., president, Massachusetts Institute of Technology, Cambridge, Some Evolutionary Trends in Professional Education.
Capt. A. Warren Stearns (MC), U. S. Naval Reserve, dean on leave of Tufts College Medical School, Boston, In Retrospect.
Comdr. Bartholomew W. Hogan (MC), U. S. Navy, Navy Medicine on the Home Front and in Combat Areas.
Leonard Carmichael, LL.D., president, Tufts College, Some Distinctive Characteristics of Medical Education at Tufts.

At this time "A History of Tufts College Medical School," prepared by Dr. Benjamin Spector, professor of anatomy and professor of the history of medicine at Tufts, will be presented.

MICHIGAN

James L. Wilson Goes to Professorship in New York.—Dr. James L. Wilson, associate professor of pediatrics at Wayne University College of Medicine, Detroit, has been appointed chief of the children's medical service at Bellevue Hospital and professor of pediatrics at New York University College of Medicine, New York. Dr. Wilson graduated at Harvard Medical School, Boston, in 1926.

Changes in Health Officers.—Dr. Neal N. Wood, Mackinac Island, health director of Charlevoix, Emmet, Otsego and Antrim counties, has been appointed in charge of the Bay County department of health, succeeding Dr. Douglas A. Fryer, Bay City, resigned.——Dr. Addison D. Aldrich, Houghton, has been named director of the Houghton-Keweenaw-Baraga health department.——Dr. Mordechai A. Elstein was recently named health officer of Delta County, it is reported.

Graduate Courses.—The Michigan State Medical Society in cooperation with the University of Michigan Medical School, Ann Arbor, Wayne University College of Medicine, Detroit, the Michigan Department of Health and the Wayne County Medical Society announces the extramural postgraduate courses for the autumn of 1943. The centers and dates are Ann Arbor October 12 and November 9, Battle Creek October 5 and 19, Flint October 12 and 26, Grand Rapids October 12 and November 9, Lansing October 7 and 14, Mount Clemens October 13 and 27, Saginaw October 19 and November 16, and Traverse City October 8 and November 12. On the first day the program will include lectures on the "Recent Advances in the Management of Cardiac Irregularities" and "Syphilis, Serologic and Clinical Findings in Relation to Treatment," and a panel discussion on "Evaluation of the Surgical Risk." In addition to a panel discussion on "Newer Drugs and Their Uses in Practice" the program for the second day will include lectures on "Fatigue: Its Increasing Significance in Wartime" and "Practical Problems in the Management of the Menopause." An intramural course on "Electrocardiographic Diagnosis" will be held at the University Hospital, Ann Arbor, November 1-6. Additional information may be obtained from the committee on postgraduate education, Room 2040, University Hospital.

MISSISSIPPI

Dr. Guyton Retires as Dean.—Dr. Billy S. Guyton has resigned as dean of the University of Mississippi School of Medicine, University, effective August 31. Dr. Guyton, who received his master's degree at the University of Mississippi, has been associated with the medical school since 1915, firs. as professor of bacteriology and pathology and later as professor of minor surgery. He has been dean since 1935. Dr. James B. Looper, recently appointed assistant dean of the school (THE JOURNAL, July 31, p. 959), has been named to succeed Dr. Guyton, effective September 1.

NEW YORK

Dr. Tainter Named Professor of Physiology at Albany.—Dr. Maurice L. Tainter, director of research of the Winthrop Chemical Company, Inc., Rensselaer, has been appointed professor of applied physiology at the Albany Medical College. The appointment to the medical school will not interfere with his activities at Winthrop. Prior to his association with Winthrop, Dr. Tainter was professor of pharmacology at the Stanford University School of Medicine and professor of pharmacology and head of the division of physiologic sciences at the College of Physicians and Surgeons, School of Dentistry, San Francisco.

District Meetings.—On September 21 the Third District Branch of the Medical Society of the State of New York held its annual meeting in Troy. Among the speakers were Col. Eugene R. Whitmore, M. C., U. S. Army, Washington, D. C., on "Postwar Problems in Tropical Diseases in Civilian Practice." The fifth district branch devoted its September 22 meeting to a symposium presented by the department of obstetrics of the Syracuse University College of Medicine. In addition Dr. Leon H. Griggs, Syracuse, among others, discussed "Common Diseases of the Skin." The sixth district branch will be addressed on September 28 among others by Lieut. Herbert Brown Jr. (MC), U. S. Naval Reserve, on "Physiologic Considerations in the Treatment of Burns." Dr. Richard B. Cattell, Boston, among others, will address the seventh district branch in Rochester, September 30, on "Recent Improvements in Biliary Tract Surgery."

New York City

Personal.—Dr. George G. Ornstein has been appointed professor of medicine and attending physician (chest diseases) at the New York Polyclinic Medical School and Hospital.——Barry G. King, Ph.D., recently resigned as assistant professor of physiology at Columbia University College of Physicians and Surgeons to accept a commission as lieutenant in the U. S. Naval Reserve as a physiologist assigned to medical research at the Naval Research Institute, National Naval Medical Center, Bethesda, Md.——Dr. James C. Magee, major general, U. S. Army, formerly surgeon general, who just returned from a trip to the troops in England and North Africa, lectured before the faculty and students of the New York University College of Medicine recently on military medicine with special reference to tropical diseases.——Gordon T. Broad, assistant to Dr. Edward M. Bernecker, commissioner of hospitals, has been appointed a deputy commissioner. Mr. Broad has been in city service since 1912 and since February of this year has acted as food administrator for city institutions.

Postgraduate Course in Industrial Medicine.—To meet the continued wartime need for a general training course for physicians engaged in or desiring to enter into industrial practice, the Long Island College of Medicine, Brooklyn, has announced its second postgraduate course in industrial medicine, to be given in Brooklyn, November 1-12. The course, designed for physicians, has been limited to fifty. A limited number of others will be permitted to attend as auditors. Dr. Thomas D. Dublin, associate professor of preventive medicine and community health, which is sponsoring the course, will be in charge. The program will consist of afternoon and evening lectures at the college and morning clinics in the medical departments of nearby industrial plants. Assisting Dr. Dublin in the formulation and development of the course are Dr. Cassius H. Watson, medical director of the American Telephone and Telegraph Company, alumnus and trustee of the college; Dr. John J. Wittmer, medical and personnel director of Consolidated Edison Company, an alumnus, and Alfred R. Crawford, A.B., assistant to the dean in the department of administration. The general topics of the lecture sessions, various phases of which will be discussed, include "The Physician in Industry and His Field," "Planning an Industrial Medical Department," "Evaluating the Health Status of the

Worker," "Occupational and Nonoccupational Incapacitation," "Community Factors in the Health of the Worker," "Industrial Accidents," "Protecting the Place of Work," "Surgical Management of Industrial Injuries," "Industrial Toxicology" and "Special Wartime Problems in Industrial Medicine."

OHIO

Health Supervisor Wins Howell Medal.—Dr. Lyman W. Childs, Orlando, Fla., health supervisor in the Cleveland Public Schools from 1910 to 1935, has been announced as the recipient of the William A. Howell Medal for distinguished service in the field of school health. The award will be presented to Dr. Childs at the annual meeting of the American School Health Association in New York, October 11. Dr. Childs retired in 1935.

Academy of Medicine Opposes Medical Care Plan.—On August 6 the board of directors of the Academy of Medicine of Cleveland at a special meeting voted their opposition to the proposed medical service plan and went on record that it will actively oppose such a plan. The medical service plan is one instigated by the Cleveland Medical Service Association, which was set up in 1942 to assume leadership in drawing up a plan for citizens of Cuyahoga County after a vote of the academy had rejected the approval of such a plan (THE JOURNAL, Dec. 19, 1942, p. 1328). In presenting a statement, the board of directors of the Academy of Medicine of Cleveland said that it has become increasingly apparent that the majority of the practicing physicians of Cuyahoga County are definitely opposed to the medical care plan instituted by the Cleveland Medical Service Association. Medical service plans have twice been defeated by vote of the academy membership, it was stated. This position is supported by the majority of nonmembers of the academy residing in the county.

PENNSYLVANIA

State Medical Meeting.—The ninety-third annual session of the Medical Society of the State of Pennsylvania will be held at the Bellevue-Stratford Hotel, Philadelphia, October 5-7, under the presidency of Dr. Robert L. Anderson, Pittsburgh. Among the speakers on the program will be:

Robert A. Hingson Jr., assistant surgeon, and Waldo B. Edwards, passed assistant surgeon, U. S. Public Health Service, An Analysis of the First Ten Thousand Obstetric Cases Managed with Continuous Caudal Analgesia, with Report of Author's First Twelve Hundred Cases.
Drs. Michael G. Wohl and Harold F. Robertson, Philadelphia, Bromide Intoxication—Some Observations on Its Treatment with Sodium Chloride and Desoxycorticosterone.
Dr. John B. Montgomery, Philadelphia, The Role of Gynecologic Lesions in Ureteral Obstructions.
Dr. Vincent T. Curtin, Scranton, The Use of Blood Plasma Intraperitoneally in the Treatment of Gastroenteritis in Infants.
Drs. Paul M. Rike, Duquesne, and Frank J. Gregg, Pittsburgh, Cardiovascular Survey of Supervisors.
Dr. Louis H. Clerf, Philadelphia, Prevention of Bronchiectasis.
Dr. James M. Alexbury, Philadelphia, Obstetric Deaths Resulting from Operative Deliveries Other than Cesarean Section.
Dr. George F. Cahill, New York, Hormonal Tumors of the Adrenal Gland.
Dr. Francis C. Grant, Philadelphia, Surgical Treatment of Cranial Trauma.
Dr. Joseph A. Hepp, Pittsburgh, Menopausal Management—A Further Report on Diethylstilbestrol.
Dr. Thomas M. Durant, Philadelphia, Thiocyanate Therapy in Hypertension.
Dr. Burton Chance Jr., Philadelphia, Evaluation of the Kenny Method in Chronic Infantile Paralysis.
Dr. Robert L. Moorhead, Brooklyn, Complications of Mastoiditis.
Dr. Eugene F. Pendergrass, Philadelphia, The Roentgen Diagnosis of Some of the Lesions Around the Diaphragm.
Dr. Charles M. Hower, Bloomsburg, The Problems of the Rural Surgeon.
Dr. Leo H. Criep, Pittsburgh, Allergic Dermatitis—Diagnosis and Treatment.
Dr. Norman M. MacNeill, Philadelphia, Infant Feeding in a Rationed Era.
Dr. Walter Hughson, Abington, Hearing Aids.
Dr. Wendell J. Stainsby, Danville, The Treatment of Pneumonia in General Practice.
Dr. Thomas A. Shallow, Philadelphia, The Surgical Aspect of Acute Pancreatitis.
Dr. Charles F. Kutscher, Pittsburgh, Retinal Arteriolar Changes in Sclerosis and Hypertension.
Drs. Robert Denison, Harrisburg, and Joseph C. Yaskin, Philadelphia, Medical and Surgical Masquerades of the Depressed States.
Drs. Henry D. Rentschler and John W. Settle Jr., Sayre, Treatment of Impaired Hearing by Radiation of Excessive Lymphoid Tissue in the Nasopharynx.
Dr. David M. Davis, Philadelphia, The Absence of Pain in Serious Urologic Disease.
Dr. Wallace M. Yater, Washington, D. C., Selection and Interpretation of Laboratory Procedures.
Dr. W. Wallace Dyer, Philadelphia, Masked Hypoglycemia.
Drs. Francis D. W. Lukens and Francis C. Dohan, Philadelphia, Remission of Diabetes Mellitus.
Surg. Gen. Norman T. Kirk, U. S. Army, The Adaptation of War Surgery to Civil Surgery.
Dr. Guy A. Hunt, Butler, Glaucoma—Early Signs and Symptoms.
Dr. John C. Ullery, Philadelphia, Continuous Spinal Anesthesia in Gynecology and Obstetrics.
Dr. Henry K. Sangree, Philadelphia, Prostatic Carcinoma: Endocrine, Roentgenologic and Surgical Therapy.
Dr. Adolph G. DeSanctis, New York, Sulfonamides in Pediatric Practice.
Capt. Jack Edward Berk, M. C., A. U. S., Trends and Shortcoming in the Approach to Gastrointestinal Diseases; a Review Based on Experience in an Army General Hospital.
Dr. Max M. Strumia, Bryn Mawr, Post-Transfusion Hemolytic Reactions.
Louis Schwartz, medical director, U. S. Public Health Service, Washington, D. C., New Developments in Industrial Dermatitis.
Dr. James A. Cown Jr., Pittsburgh, The Principles of Preparation for and the Management of Elective Surgery in Children.
Dr. Ross Golden and Arthur P. Stout, New York, Correlation of the Roentgenologic and Pathologic Aspects of Carcinoma of the Stomach.

A special general assembly will be held Wednesday evening on the art and science of therapeutics at which the speakers will be Drs. Abraham H. Aaron, Buffalo; Calvin M. Smyth Jr. and Hobart A. Reimann, Philadelphia, and Harold B. Gardner, Pittsburgh.

Philadelphia

Tribute to the Late Martha Tracy.—The Alumnae Association of the Woman's Medical College of Pennsylvania announces the publication of a series of addresses delivered at a service in memory of the late Dr. Martha Tracy, dean of the college from 1918 to 1940. Copies of the booklet may be obtained from the alumnae office at the Woman's Medical College. The price is $1 per copy. Proceeds will be placed in the Tracy Memorial Fund.

The Alvarenga Prize Lecture.—Ernest C. Faust, Ph.D., professor of parasitology and acting head of the department of tropical medicine, Tulane University of Louisiana School of Medicine, New Orleans, will deliver the annual Alvarenga Prize Lecture of the College of Physicians of Philadelphia on October 13. His subject will be "Some Modern Conception of Amebiasis." In July Dr. Faust was announced as the winner of the Alvarenga Prize for "outstanding contribution to our knowledge of parasitology and tropical medicine" (THE JOURNAL, August 7, p. 1024).

VIRGINIA

Special Society Election.—Dr. Joseph E. Barrett, Marion, was chosen president of the Mental Hygiene Society of Virginia at its meeting in Roanoke recently. Mabel F. Martin, Ph.D., is the secretary and Frank W. Gwaltney, Richmond, executive secretary. A feature of the recent meeting was a public meeting devoted to a discussion of alcohol, a state and psychiatric problem, by Hunter Miller, formerly state senator, and Dr. Robert V. Seliger, Baltimore.

Personal.—Dr. Emmett Trible Gatewood, Richmond, was elected president of the Virginia Society of Ophthalmology and Otolaryngology recently.——Dr. Samuel D. Sturkie, former health director for the Marion-Bristol area, has been named director of public welfare in Lynchburg. He succeeds the late Mosby G. Perrow, Ph.D.——A portrait of Dr. Roshier W. Miller, past president of the state medical society, was recently unveiled at a regular meeting of the Richmond School Board. Dr. Miller has been a member of the school board for nearly twenty-three years and has served as chairman since 1928.——Elias W. Langs, assistant surgeon, U. S. Public Health Service, has been appointed health officer of Norfolk County.

State Medical Meeting.—The Medical Society of Virginia will hold its annual meeting at the Hotel Roanoke, Roanoke, October 25-27 under the presidency of Dr. John M. Emmett, Clifton Forge. Among the speakers will be:

Dr. William M. Bickers, Richmond, Functional Uterine Bleeding.
Dr. Charles Stanley White, Washington, D. C., Demerol: A Synthetic Morphine Substitute.
Dr. Matt O. Burke, Richmond, Medical Progress During the Last Sixty Years.
Dr. Charles J. Frankel, Charlottesville, The Kenny Treatment for Poliomyelitis: One Year of Observation.
Dr. David C. Wilson, Charlottesville, The Treatment of Alcoholic Addicts.
Brig. Gen. Charles C. Hillman, M. C., U. S. Army, Medical Operations in the Pacific Theaters.
Dr. Ernest L. Copley, Richmond, Agranulocytic Angina—A Drug Hazard.
Dr. Frank S. Johns, Richmond, The Treatment of New Growths at the Rectosigmoid.
Dr. Charles L. Harrell, Norfolk, Tuberculosis in the Aged.
Lieut. Col. Ernest E. Trice, M. C., A. U. S., The Continuance of Symptoms After Surgery of the Bile Tract.
Dr. Eugene L. Lowenberg, Norfolk, Femoral Vein Ligation in the Treatment of Pulmonary Embolism Due to Femoral Thrombophlebitis.
Capt. Don S. Knowlton (MC), U. S. Naval Reserve, subject not announced.
Capt. John Q. Owsley (MC), U. S. Navy, subject not announced.
Dr. Randolph H. Hope, Richmond, Pelvic Pain.
Dr. Martin L. Dreyfuss, Clifton Forge, The Diagnostic Value and the Technic of the Aspiration Biopsy of Sternal Marrow.
Dr. Harry H. Henderson, Richmond, The Prevalence and Diagnosis of Rickettsial Diseases.
Dr. William R. Jordan, Richmond, Diabetic Coma.

Drs. Dean B. Cole and L. James Buis, Richmond, Asthmatic Atelectasis Simulating Pneumonia.
Dr. Julian L. Rawls, Norfolk, Acute Surgical Conditions Complicating Malignancy.
Dr. Harvey B. Haag and P. S. Larson, Ph.D., Richmond, Recent Advances in the Pharmacology of Nicotine.
Drs. William B. McIlwaine and Leta J. White, Petersburg, Reports and Observations on About Two Hundred Cases of Whooping Cough.
Dr. Julian R. Beckwith, Clifton Forge, The Diagnosis and Medical Treatment of Pulmonary Embolism.
Dr. Everett I. Evans, Richmond, Plastic Surgery of Severe Burns.

Special society luncheons will be held the same day of the American College of Physicians, Virginia Section, Virginia Obstetrical and Gynecological Society, Virginia Orthopedic Society, Virginia Pediatric Society, Virginia Radiological Society and Virginia Urological Society.

WEST VIRGINIA

Personal.—Dr. Jerome E. Andes, former instructor in the West Virginia University School of Medicine, Morgantown, and recently medical director for the Hercules Powder Company at Lawrence, Kan., has been appointed director of the student health center at the university to succeed Dr. Roy R. Summers, who resigned to enter private practice at Charleston (THE JOURNAL, July 24, p. 885).——Dr. Harry A. Garrison, medical superintendent of the Spencer State Hospital, Spencer, has been appointed superintendent of the Weston State Hospital, Weston. He succeeds Dr. John E. Offner, Weston, who was recently named state health officer.——Robert F. Rooth, president of the board of control of the state department of public assistance, has been named director of the department for the term ending July 1, 1948; he succeeds Homer W. Hanna.

Positions in State Health Department Available.—Positions now available in the West Virginia Health Department, for which applications are being accepted, together with salary ranges, are:

Public health nurse (class A)	$1,680-1,980
Public health nurse (class B)	1,500-1,860
Public health nurse trainee	1,380-1,500
Graduate nurse	1,380-1,620
Junior engineer	2,160-2,640
Chemist	1,620-2,100
Sanitarian	1,500-2,100
Sanitarian trainee	1,200-1,500
Junior bacteriologist	1,920-2,400
Junior serologist	1,920-2,400
Technical laboratory assistant	1,500-2,100

Age limits and residence in West Virginia have been waived for consideration of applicants for these positions. Appointments may be made at a salary above the minimum. Additional information may be obtained from the West Virginia Merit System Council, 212 Atlas Building, Charleston 1.

GENERAL

National Safety Congress.—"Stop Accidents—Speed Victory" will be the theme of the thirty-second National Safety Congress and Exposition to be held at the Sherman Hotel, Chicago, October 5-7. Sessions will also be held at the Morrison and LaSalle hotels.

Council of International Relations Created by Hospital Group.—A Council of International Relations designed to promote better hospital care for the people of the world was established by the board of trustees of the American Hospital Association at a meeting in Buffalo on September 12. The council will cooperate with Nelson Rockefeller, coordinator of the Office of Inter-American Affairs, and plans to assist in maintaining reciprocal relations with all hospital groups in the world. It will concern itself with matters affecting the cooperation of hospitals in all countries and endeavor to promote better hospital care for the peoples of the world through the coordination of national hospital associations and the exchange of information on matters of hospital administration. The association also has created a postwar planning commission on hospital care to study present and prospective needs for hospital care and the present practices, policies and progress of voluntary, private and public institutions caring for the sick.

Science Writers Plan Medical Publication.—A special publication committee has been appointed by the National Association of Science Writers to explore the possibilities of founding an official journal for the association to bring the advances of science and medicine to a wide layman audience. Serving on the committee will be Robert D. Potter, New York, science editor of the *American Weekly*, William Laurence of New York *Times*, Howard Blakeslee of the Associated Press, Waldemar Kaempffert of the New York *Times*, David Dietz, Scripps-Howard Newspapers, and Lawrence Salter of the American Medical Association. Recent committee appointments include Mr. Blakeslee as chairman of the president's advisory committee, Mr. Laurence, chairman of the war advisory committee, and Gobind B. Lal, International News Service, chairman of the program committee. Officers of the association are Mr. Potter, president, and Capt. Stephen J. McDonough, M. A. C., of the Office of the Surgeon General of the Army, secretary-treasurer.

LATIN AMERICA

Health Activities in Latin America.—The establishment of a cooperative program to promote health and sanitation in the Dominican Republic was provided under an agreement, August 26, by Dr. George C. Dunham, as representative of the Institute of Inter-American Affairs, and Dr. Dario Contreras, secretary of the Department of State for Health and Public Welfare in the Dominican Republic. The agreement provides for the creation in the department of state for health and public welfare of the republic of a special technical service to be known as the Servicio Cooperativo Inter-Americano de Salud Publica to serve as the agency responsible for the cooperative program and to constitute a separate entity in the department of state for health and public welfare and as an integral part of the government. The Institute of Inter-American Affairs will furnish a group of persons to be known as the field party to collaborate with the secretary of state for health and public welfare. Members of the field party will be in charge of Dr. Thomas B. Phinizy, now chief of the party in Costa Rica. The nature and extent of the health and sanitation projects will be determined by Dr. Cantreras and Dr. Phinizy.

Construction.—Plans have almost been completed for the Quinta Normal Health Center in Santiago, Chile, to provide services for venereal disease, child welfare, maternity and tuberculosis. Provisions are also being made for an auditorium that will seat 150 persons, for desks for 20 visiting nurses and 1 sanitary engineer with 4 assistants, for a milk distributing station and for public baths and laundries. A health center is also being planned for Valparaiso; locations for other centers have yet to be selected. In Peru new hospitals are under way at Iquitos, Pucallpa, Yurimaguas, San Martin, Chimbote and Tingo Maria. A health center is being planned at Lima, and a dispensary at Barranca was begun in July. In Paraguay the new building in projects include a health center and ministry of health building Asunción and an addition to the Barrio Obrero Hospital, general improvements to the National Hospital de Clinicas and a leprosy preventorium.

New Health Units.—A cooperative organization has been started in Mexico to be known as the Direccion de Cooperacion Inter-Americana de Salubridad Publica, or D. C. I. S. P. It will function as an integral part of the department of public health of Mexico and have offices in the department's building. Health Centers are also being planned at Encarnacion, Villarrica and Conception.

University Project.—The Department of Health of Mexico has signed an agreement with the Tulane University of Louisiana School of Medicine, New Orleans, to establish and maintain a health unit and field training station at Boca del Rio, Vera Cruz, with a full time resident director and staff. The unit will function as a health center for the welfare of the community and serve as a training center for physicians named by the Mexican department of health or by Tulane University with the approval of the Mexican department. Patients in the health unit of the city of Vera Cruz and in the hospitals there and those obtained through the facilities of the Institute of Tropical Diseases and other hospitals in Mexico, D. F., and clinic patients of Boca de Rio will be available for study. Funds to construct and equip the health unit building at Boca del Rio will be provided by the Mexican department of public health and Tulane University, but the department will provide funds to operate the health unit as such. Additional expenses incurred in connection with the training program for physicians chosen at Tulane's suggestion will be paid by the university.

New Medical Organization.—A new medical society organized in Asunción, Paraguay, to be known as the El Circulo Paraguayo de Medicos, held its first general meeting on July 20. Dr. Juan Max Boettner was named president and Dr. Manuel Riveros vice president.

CORRECTION

Robert Collier Page.—In the list of Aviation Medical Examiners in the Medicine and the War section of THE JOURNAL, September 4, page 40, under New York, the fifteenth name listed should have been Robert Collier Page instead of Robert Clinton Page.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 6, 1943.

The British Medical Association and the Beveridge Scheme

The stand made by the representatives of the British Medical Association against the government proposals has been described in a previous letter (THE JOURNAL, July 10, p. 759). The discussions with the minister of health are concluded and the next stage is the issue by him of what is called "a white paper" surveying the position. The representatives of the association urged on him that this paper should be confined to a statement of the problems and not commit the government to any solution, thus facilitating frank discussion by the public and the profession. On the minister's ruling the discussions were confined to a consideration of a comprehensive health service available to the whole community. They ranged over a wide field, such as central and local administration, health centers, free choice of doctor, private practice and remuneration. The council of the British Medical Association has reaffirmed certain basic principles laid down in the association's "General Medical Service for the Nation" approved in 1938: 1. The system should be directed to the achievement of health and prevention of disease no less than to the relief of sickness. 2. There should be provided for every one a family doctor of his own choice. 3. Consultants and specialists, laboratory and other auxiliary services, institutional provision when required, should be available through the agency of the family doctor. These recommendations and the following further ones are submitted by the council for consideration by the divisions of the association: The state should not assume control of doctors rendering personal service. It is not in the public interest to convert the medical profession into a salaried branch of government service. Free choice of doctor should be preserved and the state should not invade the doctor-patient relationship. Free choice of doctor should be reinforced by a method of remuneration related to the amount of work done. Consultants and specialists should normally be based on the hospital. For those who wish to be treated in private accommodation, whether part of a hospital or not, private consulting practice should continue as at present. The central administrative body set up for the medical service of the future should be responsible for all civilian health services. The minister to whom this body is responsible should be advised on medical matters, including personnel, by a medical advisory committee representative of the medical profession. Locally, new administrative bodies, responsible to the central authority, should cover wide areas and should be representative of the community served and, in appropriate numbers, of the local profession and voluntary hospitals.

British Surgeons Observe Russian Medical Services

A mission of British surgeons, sent to Russia by the British Council and the Medical Research Council (THE JOURNAL, July 10, p. 752), has returned favorably impressed by the Russian medical institutes and the medical services of the army. The mission included Surgeon Rear Admiral Gordon-Taylor, consulting surgeon to the Royal Navy; Mr. E. Rock Carling, consultant adviser to the Ministry of Health; Major General D. C. Monro, consulting surgeon to the British army, and Mr. R. W. Watson-Jones, civilian consultant in orthopedic surgery to the Royal Air Force. Two American surgeons, Col. Elliott C. Cutler and Lieut. Col. Loyal Davis, and a Canadian surgeon, Prof. Wilder Penfield, accompanied the mission. The general conclusions reached by the mission were given at a reception held at the offices of the British Council. "We are convinced that the Russian soldier is in thoroughly good hands," said Mr. Carling. "Many of those hands are women's hands. We came away with tremendous admiration for the Russian women and particularly for the Russian nurses. At the front we found that they could turn their hands to anything. In a forest we came to a hospital which the nurses were enlarging in their spare time, cutting down timber, digging the ground, building the wards. After dinner they gave an extremely good cabaret show."

The organization of the Russian medical services was first rate and thoroughly well adapted to the enormous number of wounded. Their surgical work also was good. They appeared to follow the same principles as British surgeons. The system of blood transfusion was most impressive. It was carried out on a colossal scale in the best way. The arrangements for the collection of blood were beyond criticism. The enormous numbers dealt with was shown by the fact that one Moscow institution handled 500 to 800 cases a day. Ninety per cent of the donors were women, who were bled up to seven times a year. They were paid but voluntarily returned 80 per cent of what they received for war purposes. Where blood was needed it was never lacking. It was transported to the front in big airplanes and then in smaller ones to outlying parts. Airplanes were used behind the German lines for carrying wounded partisans to concealed small hospitals. The Russians appeared to have solved the problem of getting special cases into the hands of specialists as soon as possible. Even in advanced hospitals 8 to 10 kilometers from the front different types of cases were segregated in the hands of junior specialists, to be passed back to the special hospitals. Of the doctors now being trained in Russia 90 per cent are women, compared to the normal 50 per cent. Seventy per cent of the wounded recover so completely as to return to the battlefield. Each bottle of blood for the wounded is labeled with the donor's name, which has led to romances between the donor and the recipient.

The Prevention of Venereal Diseases

As reported in previous letters, the increase in venereal diseases due to the war has brought about a public discussion of the subject unparalleled in this country before. In his presidential address to the York diocesan conference the archbishop of York stated that there has been an increase of 120 per cent in syphilis, though the proportion of all forms of venereal disease was smaller for this war than for the last. The rise in syphilis had been mainly among women. The church must help in prevention by giving clear and definite teaching. Increased venereal disease was a symptom of increased moral laxity. The church had always condemned promiscuous intercourse, but at the present day there were many who saw no harm in it if the consent of both parties was given. Some advocated compulsory notification of the disease. He thought universal compulsory notification impossible. This would tend to drive the disease underground, as the patient would delay consulting the doctor who would have to notify the authorities. But if the disease could not be checked it might be desirable to notify it in certain localities. He approved of the compulsory treatment of those proved to be centers of contagion, as adopted by the Ministry of Health. He also thought it right that instruction should be given as to how to avoid venereal disease, provided this was accompanied by the statement that there was no safety except in avoiding promiscuity. Care should be taken to provide recreation in all isolated camps. More women police were required to deal with girls who hung about camps pestering the men. More intelligent teaching of the Christian view of sex was needed.

Huge Profits from the Sale of a Proprietary Pill

At the annual general meeting of Beechams Pills Ltd. the chairman reported that for the eleventh successive year there were increased profits. For the past year they amounted to $6,000,000, which was $470,000 up on the previous year, in spite of difficulties created by the war. The raw material position was more difficult and quotas and other restrictions militated against sale expansion. The huge profits indicate the extent to which the public treats itself for constipation and, even in its absence, for symptoms which it imagines will yield to an aperient.

BRAZIL

(From Our Regular Correspondent)

July 30, 1943.

Puerperal Sepsis

Dr. João M. Pereira, assistant physician of the Arthur Bernardes Maternity of Rio de Janeiro, has published a study of the incidence of puerperal sepsis in 1,000 consecutive deliveries performed in that hospital, at the same time presenting recent data from other hospitals of Brazil and South America. Dr. Pereira emphasizes that puerperal sepsis is rather prevalent in Rio de Janeiro, where many pregnant women are delivered by low standard midwives, particularly in the suburbs. The mean annual maternal mortality rate for the decade 1932-1941 is 6.9 per thousand live births, and out of the total of maternal deaths puerperal septicemia represents the high average of 46.8 per cent. In 1942 puerperal septicemia and infection was registered as the cause of 126 deaths, or 41.5 per cent of the maternal deaths (1 death in 321 live births, as against 1 in 282 in 1941). Even in the hospitals, puerperal sepsis is now not uncommon. In 1911 Dr. Fernando Magalhães, professor of obstetrics at the University of Rio de Janeiro, began a campaign against intrauterine manipulation and excessive vaginal douching and at the same time recommended the routine use of Mouchotte metallic drains.

Dr. Pereira emphasizes that the Arthur Bernardes Maternity is a free hospital that receives childbearing women from its antepartum clinic as well as directly from the homes. Most come through the Municipal Emergency Medical Service, staffed in part by medical students who do not refrain sufficiently from vaginal examination before sending the patients to the maternity. In this maternity its director, Dr. Clovis Correa da Costa, is following the policy of enforcing strict measures to prevent infection, primarily as a medical educational campaign. Here all patients presenting a temperature above 38 C. (100.4 F.) after the first twenty-four hours, persisting for more than one day and showing positive signs of infection (fever, uterine subinvolution, changes in the lochia), with absence of another intercurrent infection, are considered "infected." Also considered cases of infection are the atypical ones in which the careful examination of all organs does not disclose the origin of the fever.

As a general prophylactic measure, in the antepartum clinic all the genital foci of infection are carefully treated. After entering the hospital the patients are subjected to the most rigorous aseptic care. During labor, prophylactic vaginal instillations are routinely used (2 per cent mercurochrome solution every four hours), a procedure that is not yet generalized in the Brazilian maternities.

According to the data from a paper published a few months ago by Dr. H. Duek, also an assistant of this maternity, the rate of infected cases was immediately halved (from 6.6 per cent to 3.3 per cent) after these routine prophylactic instillations had been adopted. Also as a prophylactic measure, in the cases in which examination of the placenta discloses the retention of cotyledons or fragments of the membranes, a manual uterine control is done, after the plan first suggested by Gheorgiu of Bucharest, followed by an intrauterine washing with boiled water. A special paper on the good results of this technic will be soon presented by Dr. Rezende Figueiredo. Still as a prophylactic measure in the cases presenting larger possibilities of infection (manual deliveries, internal versions, protracted cesareans, difficult forceps deliveries) sulfonamides and estrogens are used, associated or not.

As a comparison, Dr. Pereira states that in the Maternidad del Salvador in Santiago, Chile, data relating to 1940 and 1941 show 889 cases of infection in 3,352 deliveries (26.5 per cent) for the former and 908 cases of infection in 3,718 deliveries (24.4 per cent) for the latter year. Recent data from the maternity service of Prof. Peralta Ramos of Buenos Aires, Argentina, present a rate varying between 10 and 15 per cent of infections. In the Buenos Aires maternity directed by Dr. Palacios Costa the latest information gives only 4.5 per cent of infections. In the maternity service of Dr. Gonzales in Buenos Aires the data for the last two years are 4.60 and 4.72 per cent. At the Laranjeiras Maternity, under the direction of Dr. Fernando Magalhães, professor at the University of Rio de Janeiro, the rate for the last year is 8.3 per cent of cases of infection, with 0.6 per cent of mortality. In the 1,000 deliveries presented in Dr. Pereira's paper, from the Arthur Bernardes Maternity under Dr. Clovis Correa da Costa, there were only 42 cases of puerperal sepsis, what corresponds to the general rate of 4.2 per cent for the whole group, without any death. But the important point is the sharp decrease in the rate, as a response to Dr. Correa da Costa's campaign: 4.88 per cent for the year 1940, 4.72 for 1941 and 0.67 for 1942.

Marriages

RICHARD BEDON JOSEY, Columbia, S. C., to Miss Norma Katherine Vanderlip at Niagara-on-the-Lake, Ont., Canada, recently.

EDWIN BURWELL JONES WHITMORE JR., Petersburg, Va., to Miss Claudine Price Burkholder of Richmond, July 31.

JOSEPH CULLEN HALL, Winston-Salem, N. C., to Miss Mary Catherine Cheek of Graham at Saxapahaw, August 21.

SOLOMON MURRAY RAUCHWERGER to Miss Vauda V. Martin, both of Oteen, N. C., in Asheville, N. C., July 15.

SAMUEL WESTBROOK HATCHER to Miss Dorothy Marie Bonner, both of Jersey City, N. J., June 10.

NICHOLAS G. BUTLER, Hartford, Conn., to Miss Helen Regina McDermott of Bridgewater, Mass., July 20.

LAWRENCE RODNEY RODGERS, Amarillo, Texas, to Miss Ivy Lorna Piper of Decherd, Tenn., August 6.

JOHN ALLISON HOLMES, Lawrence, Kan., to Miss Elizabeth Jane Ames of Vernon, N. Y., recently.

ANTHONY J. FREDERICK, Columbus, Wis., to Miss Roshara Bussewitz of Horicon, August 21.

SPENCER ALLEN TRUEX, Jackson, Tenn., to Dr. Barbara Mae Binkley of Nashville recently.

RICHARD VERNON MANSELL to Miss Anna L. Stolzenberger, both of New York, July 31.

HENRY F. BERCHTOLD to Miss Florence Wilcoxson, both of Springfield, Ill., August 14.

ROBERT A. CRAIG, Gary, Ind., to Miss Mildred McFarren of Indianapolis, July 10.

CARRIE J. ANDERSON to Mr. Charles Robbins, both of Grand Junction, Colo., June 30.

CARL R. GREEN to Miss Evelyn Walker, both of Morristown, Tenn., August 3.

LOUIS F. KRUMREIN to Miss Anna Irene Zirkler, both of Baltimore, August 18.

CHARLES E. BRANCH to Miss Edna Kennedy, both of Piper City, Ill., August 29.

LEON S. EISENMAN, Chicago, to Miss Ida Weinstein in New York recently.

MOSES BENMOSCHE to Mrs. Gladys Goodman, both of New York, in August.

RICHARD W. DRIVER to Miss Elaine Thies, both of Waterloo, Iowa, June 10.

Deaths

Elias Joseph Marah ● Paterson, N. J.; Columbia University College of Physicians and Surgeons, New York, 1900; president of the Medical Society of New Jersey, 1942-1943, formerly second vice president and for many years treasurer; in 1921 president of the Passaic County Medical Society; served as president of the New Jersey Sanitary and Health Association and the Harvard Club of New Jersey; member of the House of Delegates of the American Medical Association in 1903; member of the Academy of Medicine of Northern New Jersey and the Robert McKean Medical History Club; specialist certified by the American Board of Ophthalmology; a captain in the medical corps of the U. S. Army during World War I and later a lieutenant colonel in the medical reserve corps not on active duty; served as senior assistant surgeon at the Herman Knapp Memorial Eye Hospital, New York; surgeon emeritus, Paterson Eye and Ear Infirmary; consulting surgeon to the Paterson General Hospital and the Valley View Sanatorium; aged 68; died in the Neurological Institute of New York, September 11, of injuries received in a fall the previous day.

Twing Brooks Wiggin, Janesville, Wis.; College of Physicians and Surgeons of Chicago, 1886; member of the Illinois State Medical Society; professor of physiology at the American Dental School, Chicago, from 1889 to 1894; professor of physiology and general pathology at the Northwestern University Dental School, Chicago, from 1894 to 1924; professor of physiology at his alma mater, now known as the University of Illinois College of Medicine, from 1896 to 1899, professor of microscopic and chemical diagnosis from 1899 to 1901, adjunct professor of practice of medicine and clinical medicine from 1901 to 1908 and professor of physical diagnosis from 1908 to 1912; member of the associate staff of the Cook County Hospital, Chicago, from 1906 to 1908; author of "Outlines of Physiology," 1903, and "Lectures on Pathology," 1905; aged 78; died, August 23, of coronary thrombosis.

Meyer K. Amdur, Cincinnati; Tomsk Medical Institute, Tomsk, R. S. F. S. R., 1920; member of the Medical Society of the State of Pennsylvania, Southern Psychiatric Association and the American Psychiatric Association; from 1918 to 1920 was a captain in the Russian army in Siberia; formerly on the staffs of the Cleveland State Hospital, Toledo State Hospital, Gallinger Hospital, Washington, D. C., and Veterans Administration Facility in Philadelphia and Augusta, Ga.; in 1942 resigned as chief of the reconstruction service, Veterans Administration Facility, Coatesville, Pa., to become assistant superintendent and resident physician at the Longview State Hospital, where he died, July 15, of extensive obliterative arterial disease, aged 48.

Thomas Hubbard, Ashtabula, Ohio; University of Pennsylvania Department of Medicine, Philadelphia, 1885; specialist certified by the American Board of Otolaryngology; member of the House of Delegates of the American Medical Association in 1904; secretary of the Ohio State Medical Association from 1892 to 1895; president of the Toledo Academy of Medicine in 1906; member of the American Laryngological Association and in 1913-1914 president; member of the American Laryngological, Rhinological and Otological Society and the American Otological Society, Inc.; formerly on the staffs of the Robinwood, St. Vincent's, Toledo and Flower hospitals, Toledo; aged 83; died, July 5, of myocarditis.

Owen Smith, Portland, Maine; Medical School of Maine, Portland, 1892; member of the Maine Medical Association; fellow of the American College of Surgeons; past president of the New England Otological and Laryngological Society; specialist certified by the American Board of Otolaryngology; served on the staffs of the Maine Eye and Ear Infirmary, the Maine General Hospital and the Children's Hospital, Portland, and the Webber Hospital, Biddeford; past president of the board of directors of the Maine School for the Deaf; aged 74; died in Standish, July 29, of aneurysm of the abdominal aorta.

Ernest Boone Downs, Bath, N. Y.; St. Louis College of Physicians and Surgeons, 1915; National University of Arts and Sciences Medical Department, St. Louis, 1917; served as a captain in the medical corps of the U. S. Army during World War I and with the sanitary corps and Base Hospital of the 90th division; formerly a captain of Company H, 102d Medical Regiment of the New York National Guard; at one time on the staff of the Veterans Administration Home, Danville, Ill., and the Veterans Administration Facility, where he died, July 22, aged 53.

Fritz C. Askenstedt ● Louisville, Ky.; Pulte Medical College, Cincinnati, 1889; at one time professor of physical diagnosis, diseases of the chest, pathology and bacteriology at the Southwestern Homeopathic Medical College and Hospital; formerly visiting physician to the Louisville City Hospital; aged 78; died, June 16, of carcinoma of the stomach.

Chester Clyde Box ● Crestview, Fla.; Medical Department of Tulane University of Louisiana, New Orleans, 1909; served in the medical corps of the U. S. Army during World War I; aged 58; died, July 3, of coronary thrombosis.

Robert Jackson Brown, Iuka, Miss.; Memphis (Tenn.) Hospital Medical College, 1907; member of the Mississippi State Medical Association; past president of the North Mississippi Medical Association; aged 65; died, July 12, of chronic myocarditis, bronchitis and endarteritis.

Fred Burger, Olathe, Kan.; University Medical College of Kansas City, Mo., 1899; for many years director of health and physical education in the Kansas City, Mo., public schools; aged 74; died recently of pulmonary thrombosis.

Adam McClintic Byrd, Bluefield, W. Va.; Medical College of Virginia, Richmond, 1898; member of the West Virginia State Medical Association; aged 74; died in St. Luke's Hospital, July 4, of chronic lymphatic leukemia.

Walter Joseph Cathrall, Bethlehem, Pa.; Baltimore University School of Medicine, 1901; member of the Medical Society of the State of Pennsylvania; veteran of the Philippine Insurrection, Spanish-American War and World War I; served several terms as coroner of Northampton County; surgeon for the city police department; aged 79; member of the staff of St. Luke's Hospital, where he died, June 23, of senility.

John Mayo Conley, Oshkosh, Wis.; Northwestern University Medical School, Chicago, 1897; member of the State Medical Society of Wisconsin; medical director of the Wisconsin National Life Insurance Company; for many years served as health officer of the city of Oshkosh; served in the medical corps of the U. S. Army during World War I; aged 69; on the staff of the Mercy Hospital, where he died, June 7, of carcinoma of the urinary bladder.

William Benjamin Dangerfield Cooper, Philadelphia; Temple University School of Medicine, Philadelphia, 1918; also a pharmacist; served on the staff of the Frederick Douglass Memorial Hospital; aged 53; died, June 1, of carcinoma of the adrenal gland.

John Fred De Courcy, Cincinnati; Medical College of Ohio, Cincinnati, 1908; served during World War I; aged 59; on the staff of the Good Samaritan Hospital, where he died, July 5, of myocarditis.

Homer Denman, Baker, Mont.; Jefferson Medical College of Philadelphia, 1904; member of the Medical Association of Montana; aged 72; died, July 15, in the Holy Rosary Hospital, Miles City, of cerebral thrombosis and hemiplegia.

Charles Willard Doty, Beaver Crossing, Neb.; Rush Medical College, Chicago, 1888; Chicago Homeopathic Medical College, 1895; past president of the Seward County Medical Society; formerly a member of the state senate and coroner of Seward County; for many years had served on the pension examining board; aged 82; died, July 13, of carcinoma of the stomach.

Joseph Patrick Durkin, New York; Cornell University Medical College, New York, 1931; aged 37; died in Greenwood Lake, N. Y., June 28.

John V. Eaves, Gaffney, S. C.; Chattanooga (Tenn.) Medical College, 1897; aged 75; was found dead in his office, June 7.

Arthur Frank Edwards, Seattle; L.R.C.P. and L.R.C.S., of Edinburgh, Scotland, 1897; member of the Washington State Medical Association; contract surgeon in the U. S. Army; for many years a member of the city health department; aged 71; died, June 23, in the Station Hospital, Fort Lawton, of cerebral hemorrhage.

Carl Abraham Fjelstad, Spokane, Wash.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1892; aged 71; died recently of cerebral hemorrhage.

Francis Eugene Gibbons, Presidio, Texas; Northwestern University Medical School, Chicago, 1898; member of the State Medical Association of Texas; in 1927 was elected the first mayor of McCamey; at one time health officer of Ector County; acting assistant surgeon in the U. S. Public Health Service; aged 72; died recently of uremia.

Robert Thomas Gibbs, Mexico, Mo.; Missouri Medical College, St. Louis, 1884; aged 92; died, June 22, of senility.

Archibald H. Graham, Philadelphia; Jefferson Medical College of Philadelphia, 1898; aged 67; formerly on the staffs of the Children's Hospital and the Jefferson Hospital, where he died, June 20, of cerebral hemorrhage.

Nemorin Guilhempe, New York; College of Physicians and Surgeons, Boston, 1917; Boston University School of Medicine, 1919; aged 61; died, June 30.

Boleslaw Robert Gurgas, Buffalo; University of Buffalo School of Medicine, 1921; member of the Medical Society of the State of New York; served during World War I; member of the Selective Service System; on the staffs of the Emergency Hospital of the Sisters of Charity and the Buffalo Hospital of the Sisters of Charity; aged 47; died in Evans, N. Y., June 16, of dilatation of the heart.

Lambert John Hargarten ● Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1904; member of the staffs of St. Joseph's, St. Anthony's, St. Michael's and Misericordia hospitals; aged 70; died, June 21, of chronic myocarditis.

James Albert Harris, Jonestown, Pa.; Jefferson Medical College of Philadelphia, 1896; aged 72; died in the Good Samaritan Hospital, Lebanon, June 7, of chronic myocarditis.

Virgil O. Harvard, Arabi, Ga.; Southern Medical College, Atlanta, 1897; member and past president of the Medical Association of Georgia; aged 68; died, June 26, of hypertensive heart disease.

Thomas A. Hathcock, Norwood, N. C.; University of Maryland School of Medicine, Baltimore, 1893; member of the Medical Society of the State of North Carolina; served as a major in the medical corps of the U. S. Army during World War I; member of the staff of the Yadkin Hospital, Albemarle; aged 77; died, June 16, in the Memorial Hospital, Charlotte, of cerebral hemorrhage and cirrhosis of the liver.

Frank J. Higgins, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1895; formerly on the staffs of St. Joseph's and St. Mary's hospitals; aged 70; died in the Hospital of the Woman's Medical College of Pennsylvania, June 14, of pneumonia.

Frank Edwin Hill ● Muncie, Ind.; Medical College of Ohio, Cincinnati, 1890; a member of the staff of the Ball Memorial Hospital, where he died, July 15, of cerebral hemorrhage, aged 81.

Clyde Toney Hockett, Enterprise, Ore.; Willamette University Medical Department, Salem, 1904; member of the Oregon State Medical Society; veteran of the Spanish-American War and World War I; served three terms as a member of the state legislature; for many years member of the school board and city council; medical director of the Enterprise Hospital; aged 65; died, June 11, of coronary thrombosis.

Urial G. Holloway, Troy, Ky.; University of Louisville Medical Department, 1879; president of the local bank; aged 90; died in the Woodford Memorial Hospital, Versailles, July 14, of pneumonia.

John Musser Holmes, Monticello, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the Illinois State Medical Society; secretary and past president of the Piatt County Medical Society; aged 75; on the staff of the John and Mary E. Kirby Hospital, where he died, June 10, of coronary thrombosis.

Thomas Allison Horine, Brighton, Ill.; St. Louis Medical College, 1879; member of the Illinois State Medical Society; served as mayor and president of the board of education of Brighton; formerly on the staffs of the Alton Memorial and St. Joseph hospitals, Alton; aged 84; died, July 15, of chronic hemorrhage.

Henley Harvey Hubbard, Boswell, Ind.; Indiana University School of Medicine, Indianapolis, 1911; member of the Indiana State Medical Association; served during World War I; formerly coroner of Benton County; aged 56; died, July 4, in St. Elizabeth Hospital, LaFayette, of cerebral hemorrhage.

Robert Virgil Huggins, Columbus, Ohio; Pulte Medical College, Cincinnati, 1891; aged 74; died, July 23, of pneumonia.

Vincent Ippolito, Beaumont, Texas; University of Texas School of Medicine, Galveston, 1927; member of the State Medical Association of Texas; began active duty as a captain in the medical corps of the Army of the United States, Sept. 25, 1942 and was assigned to Camp Polk, La.; honorably discharged in March 1943; aged 39; died, July 15, of a self-inflicted bullet wound.

Edward Pelham Kerper, Harrisburg, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1919; aged 47; died, June 23, of heart disease.

William T. Kimsey, Blairsville, Ga.; Atlanta Medical College, 1898; aged 70; died, June 1.

Martin Edward Klingler ● Garrett, Ind.; Fort Wayne College of Medicine, 1904; county chairman of the procurement and assignment board; medical director of The Clinic; president of the Chamber of Commerce; aged 67; died, June 19, in the University Hospital, Ann Arbor, of coronary thrombosis and pulmonary atelectasis.

George Hyde Krall, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1895; for many years a member of the medical department of Sharp and Dohme, Inc.; aged 71; died, in Lansdowne, Pa., June 21, of carcinoma of the apex of the left lung.

Derk B. Lanting ● Grand Rapids, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; on the staffs of the Blodgett Memorial and St. Mary's hospitals; aged 69; died, June 17, of angina pectoris.

Flurence William McCarthy, North Bangor, N. Y.; University of Vermont College of Medicine, Burlington, 1904; member of the Medical Society of the State of New York; president of the board of education; served as examining physician for the draft board of Malone during World War I; for many years mayor; on the staff of the Alice Hyde Hospital, Malone; aged 69; died, July 18, of heart disease.

William H. McCauley, Sutton, W. Va.; College of Physicians and Surgeons, Baltimore, 1888; member of the West Virginia State Medical Association; health officer of Sutton; aged 83; died, July 2, of coronary thrombosis.

William Irvin McFarland, Hebron, Neb.; John A. Creighton Medical College, Omaha, 1905; member of the Nebraska State Medical Association; at one time health officer of Republic County, Kan.; owner of the Blue Valley Hospital; aged 66; died, July 7, of heart disease.

William Jefferson McGowan, Paducah, Texas; Baylor University College of Medicine, Dallas, 1905; member of the State Medical Association of Texas; in 1934 served as vice president of the Hardeman-Cottle-Foard-Motley Counties Medical Society; aged 69; died recently of nephritis and arteriosclerosis.

Theophilus Weeks Madden ● Collingswood, N. J.; College of Physicians and Surgeons, Baltimore, 1898; past president of the Camden County Medical Society; school physician; aged 67; died, June 29, in the Burlington County Hospital, Mount Holly, of coronary thrombosis and arteriosclerotic heart disease.

J. George Mannhardt, Galion, Ohio; University of Wooster Medical Department, Cleveland, 1904; health commissioner of Galion; at one time coroner of Crawford County; aged 65; died, July 20, of coronary thrombosis.

Leo Bernard Meyer, New York; Columbia University College of Physicians and Surgeons, New York, 1898; fellow of the American College of Surgeons; served as a major in the medical corps of the U. S. Army during World War I; served on the staffs of the Mount Sinai, Beth Israel, Sydenham and Montefiore hospitals; aged 68; died, July 3.

Abner Haven Middleton, Cable, Ohio; Homeopathic Hospital College, Cleveland, 1887; formerly administrator of old age pensions in Champaign County; served on the staff of the Champaign County Hospital, Urbana; aged 80; died, July 7, of heart disease.

Katherine De Witt Miesse, Flushing, N. Y.; Woman's Medical College of Pennsylvania, Philadelphia, 1889; member of the Medical Society of the State of Pennsylvania; aged 89; died, July 27, of cerebral hemorrhage.

James Fitzwilliam Myers ● Virginia, Ill.; Medical Department of Tulane University of Louisiana, New Orleans, 1903; member of the staffs of the Passavant Memorial and Our Saviour's hospitals, Jacksonville; chief examining physician of the Cass County local draft board number 7; aged 72; died, July 2, of coronary thrombosis and arteriosclerosis.

Bernhard Newburger, Cincinnati; Johns Hopkins University School of Medicine, Baltimore, 1922; member of the Ohio State Medical Association; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; on the staffs of the Jewish Hospital and the Cincinnati General Hospital; aged 46; died, July 16, of coronary thrombosis.

James Lovelace Parkes, Conchatta, Miss.; University of Louisville (Ky.) Medical Department, 1906; formerly associated with the Indian Service; served overseas during World War I; at one time state senator; aged 63; died, July 6, in the Veterans Administration Facility, Tuscaloosa, Ala.

Joseph Anthony Randazzo, Jamaica, N. Y.; Boston University School of Medicine, 1934; commissioned a passed assistant surgeon in the reserve of the U. S. Public Health Service on Jan. 27, 1942; assigned for duty under the U. S. Public Health Service, district number 2, at the county health department, Wilmington, N. C.; aged 34; died, July 23, in the U. S. Marine Hospital, Norfolk, Va.

Samuel Howard Ridgway ● Shepherdsville, Ky.; Kentucky School of Medicine, Louisville, 1893; for many years physician for the Louisville and Nashville Railroad; aged 71; died in St. Joseph Infirmary, Louisville, June 14, of hypernephroma and arteriosclerosis.

Ora C. Rogers, Davenport, Iowa; John A. Creighton Medical College, Omaha, 1898; aged 83; died, July 27, of uremia.

Calvin Luther Rowland, Westpoint, Ind.; Hospital College of Medicine, Louisville, Ky., 1900; member of the Indiana State Medical Association; served during World War I; trustee of the Wayne township for two terms and deputy coroner; for many years medical superintendent of the Indiana State Soldiers' Home Hospital and on the staff of the St. Elizabeth Hospital, LaFayette, where he died, July 8, of heart disease, aged 71.

Nicola Maria Sansone, Bridgeport, Conn.; Gross Medical College, Denver, 1902; member of the staff of the Bridgeport Hospital; aged 75; died, June 23, of heart disease.

Rollo Bielby Sarginson, Jacksonville, Ill.; Loyola University School of Medicine, Chicago, 1916; on the staff of the Jacksonville State Hospital; aged 55; died in the Research and Educational Hospitals, University of Illinois, Chicago, August 2, of uremia secondary to extensive bilateral pyelonephritis.

John Smith Sayers, Springfield, Mo.; Barnes Medical College, St. Louis, 1897; member of the Missouri State Medical Association; on the staff of the Springfield Baptist Hospital; aged 71; was killed in an automobile accident, June 14.

Gustavus Adolphus Schaub ● Earth, Texas; George Washington University School of Medicine, Washington, D. C., 1912; veteran of the Spanish-American War, the Philippine Insurrection, the Chinese Boxer uprising and World War I; formerly senior medical officer of the United States transport *Mercury;* aged 64; died, July 14, of coronary occlusion.

Friedrich Schnek, Chicago; Medizinische Fakultät der Universität Wien, Germany, 1924; aged 43; was found dead in his home, June 14, apparently a suicide.

William P. Scott ● Houghton, Mich.; Detroit Medical College, 1884; an Affiliate Fellow of the American Medical Association; past president of the Houghton County Medical Society; at one time on the staff of St. Luke's Hospital, Detroit, and division surgeon of the Michigan Central Railroad; aged 85; died, July 1, of arteriosclerosis.

Raymond Charles Joseph Seed, Lawrence, Mass.; Jefferson Medical College of Philadelphia, 1921; member of the Massachusetts Medical Society; school physician; aged 45; on the staff of the Clover Hill Hospital, where he died, June 17, of cerebral hemorrhage.

Myles Bernard Sharkey, Syracuse, N. Y.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1915; school examiner; served on the staffs of the Syracuse Memorial, Peoples and St. Joseph hospitals; aged 53; died, June 21, in Bath.

Amos G. Shellito, Independence, Iowa; College of Physicians and Surgeons, Baltimore, 1882; member of the Iowa State Medical Society; past president of the Buchanan County Medical Society; part owner of the Shellito and Agnew Clinic; on the staffs of the Peoples Hospital; aged 82; died, June 30, of heart disease.

CAPT. DONALD KARL FLESSA
1902-1943, M. C., A. U. S.

Victor W. Shirley, Detroit; Saginaw (Mich.) Valley Medical College, 1902; at one time mayor of Onaway, Mich.; on the staffs of St. Joseph's Mercy Hospital, Detroit and St. Francis Hospital, Hamtramck, where he died, June 25, of pneumonia, aged 74.

William Austin Sibley, North Little Rock, Ark.; St. Louis University School of Medicine, 1906; for many years associated with the Veterans Administration as medical rating specialist; served in the medical corps of the U. S. Army during World War I; aged 64; died, June 13, in the Army and Navy Hospital, Hot Springs National Park, of coronary artery disease.

John Hagood Smith, Mullins, S. C.; University College of Medicine, Richmond, 1907; aged 60; died, July 26.

William A. Smith, Philadelphia; Jefferson Medical College of Philadelphia, 1896; aged 67; died, June 15, in the Jefferson Hospital.

Henry Augustin Spang, New Haven, Conn.; New York Homeopathic Medical College and Hospital, New York, 1891; also a dentist; for many years a member and at one time president of the local board of education; aged 74; died, June 12, in the Hospital of St. Raphael of angina pectoris.

Jacob Henry Spivey, Shreveport, La.; Memphis (Tenn.) Hospital Medical College, 1898; served on the staff of the Henderson (Texas) Memorial Hospital; aged 69; died in the Highland Sanitarium, June 25, of coronary occlusion.

Julia Ione Stannard, Petoskey, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; aged 72; died recently.

Edgar Sturge ● Scranton, Pa.; University and Bellevue Hospital Medical College, New York, 1899; fellow of the American College of Surgeons; orthopedic surgeon to the Scranton State, Mercy and West Side hospitals; aged 74; died, June 15, of paralysis agitans.

Joseph Samuel Tanner, New York; University of the City of New York Medical Department, New York, 1888; member of the Medical Society of the State of New York; aged 82; died, May 10, of heart disease.

John Holsey Thompson, West Palm Beach, Fla.; College of Physicians and Surgeons, Boston, 1911; aged 66; died, June 12, in the Pine Ridge Hospital.

Thaddeus Sims Troy, St. Petersburg, Fla.; Medical College of Virginia, Richmond, 1899; served during World War I; for many years on the staff of the Veterans Administration Facility in Washington, D. C., serving as a special medical expert and later as senior medical officer in other facilities; retired on account of disability, Nov. 26, 1941; died, June 21, of carcinoma of the prostate with metastases, secondary anemia and cachexia, aged 64.

Homer B. Watkins, Noxapater, Miss. (licensed in Mississippi in 1904); formerly health officer of Winston County; aged 63; died, June 20, of coronary thrombosis.

William M. Weems, Clopton, Ala.; Medical College of Alabama, Mobile, 1892; aged 74; on the staff of the Moody Hospital, Dothan, where he died, June 24, of intestinal obstruction.

Iantha Jane Wetmore, Grand Rapids, Mich.; Detroit Homeopathic College, 1905; aged 83; died, June 22.

KILLED IN ACTION

Donald Karl Flessa ● Babylon, N. Y.; Cornell University Medical College, New York, 1931; served on the staff of the Southside Hospital, Bay Shore; began extended active duty as a captain in the medical corps of the Army of the United States at Fort Bragg, N. C., Aug. 15, 1942; aged 40; was killed in action in Sicily, July 22.

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Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D. D. N. J. and foods, F. N. J. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Sa-Go-Ha-Ha Mineral Springs Water.—Stafford Mineral Springs Company, Vosburg, Miss. Shipped Oct. 20, 1941. Composition: "a mildly alkaline water similar to Washington tap water, except that it contained about twice the amount of dissolved mineral matter." Misbranded because of false and misleading statement on label, "It is . . . very soothing and healing to the kidneys and bladder."—[*D. D. N. J., F. D. C. 587; November 1942.*]

Codroll.—Pho-So-Ash Products Corporation, Kendallville, Ind. Shipped Feb. 10, 1941. Adulterated because its strength differed from, and its quality fell below, that which it was claimed to possess, namely, 3.71 per cent of cod liver oil extract (4833 units of vitamin A per gram) which it did not. Misbranded for the same reason and because package did not bear an accurate statement of the quantity of contents. Also misbranded and adulterated under provisions of the law applicable to foods as reported in F. N. J. 2857.—[*D. D. N. J., F. D. C. 571; November 1942.*]

Crawford's Ridia.—Crawford Foods, Inc., San Jose, Calif. Shipped Jan. 10, 1941. Composition: essentially alfalfa with smaller proportions of mint. Misbranded because accompanying circular falsely represented that the product was a substitute for the secretions of the pancreas and would be efficacious for the relief of persons suffering from diabetes; that each tablet contained a potency equal to 2 insulin units and that by its use insulin sickness would vanish; that insulin stiffness and muscular pains that grow on the patient after a prolonged use of insulin would slowly leave the body; that the blurred vision and partial blindness induced by insulin would gradually be cleared, and that this product was a natural remedy and health food adjuvant. Also misbranded under the provisions of the law applicable to foods, as reported in F. N. J.'s 2819 and 2823.—[*D. D. N. J., F. D. C. 577; November 1942.*]

Filto-Vapor Nasal Filter Outfit.—Medical Products Institute, Inc., Cincinnati. Shipped Jan. 16, 1941. Composition: consisted of a pair of nasal filters, one detachable band, tweezers, filter pads, a bottle labeled "Filto-Vapor Cold Tablets" and another labeled "Filto-Vapor Nasal Filter Pad Fluid." The cold tablets were found to consist essentially of acetophenetidin, aspirin and caffeine and the nasal filter pad fluid, essentially of camphor, menthol, eucalyptol, pine-needle oil, alcohol and a vegetable oil. Misbranded because falsely represented as a new and scientific continuous treatment for colds, sinus, sore throat, coughs, bronchitis and la grippe, since the treatment would not be efficacious for those purposes. Also misbranded because the label for the nasal filter pad fluid represented that castor oil was an active ingredient, which it was not. Further misbranded because the label of the cold tablets did not state the active ingredients, and the aspirin was not listed by its common or usual name.—[*D. D. N. J., F. D. C. 582; November 1942.*]

Hercules Congestors.—Holdfast Truss Company, Oakland, Calif. Shipped May 26, 1941. Device consisted of a metal vacuum pump and a large glass tube bearing at one end a soft rubber collar and closed at the other end with a metal cap which was threaded to screw into the pump. Misbranded because circular enclosed in each package bore the false statements, "Organ Developer. This developer removes all obstructions in the organ, propels the blood rapidly through the disordered channels, and a quick and favorable result follows. . . . This simple apparatus is called upon to increase the lost energy and remove the loss of strength. . . . In most cases results come in a short time, while others of long standing require the patient use of the developer for five or six weeks." Also misbranded because label failed to bear the name and address of the manufacturer, packer or distributor.—[*D. D. N. J., F. D. C. 591; November 1942.*]

Lishus and Bekus Puddy.—Dr. Jackson Foods, Brooklyn. Shipped Jan. 13, 1941. Composition: essentially flaxseed, rice, rice polishings, wheat and wheat bran. Both products misbranded because statement on carton, "If troubled with Acid Stomach or fermentation, etc., do not use sugar. Cook raisins or dates in with the cereal if sweet is required," was false and misleading since with or without raisins or dates they did not constitute an adequate treatment for acid stomach or fermentation. Also misbranded because pictures of a robust man accompanied by the legends, "Dr. Jackson at 80" and "photo of Robert G. Jackson, M.D., at 60," were false and misleading, since use of these products could not be depended on to produce or maintain robustness. Further misbranded because of false and misleading statements in an accompanying leaflet representing that these preparations were especially designed to relieve constipation and remove its cause by natural means, furnish sufficient roughage to stimulate muscular activity of the bowels and enough minerals to stimulate and support nervous control of those muscles, besides causing three to five evacuations a day in a person ordinarily having but two movements a week. "Lishus" was further misbranded under the provisions of the law applicable to foods, as reported in F. N. J. 2995.—[*D. D. N. J., F. D. C. 579; November 1942.*]

Lurin.—Lurin Company, Cleveland. Shipped between April 8 and 19, 1941. Composition: essentially aluminum hydroxide (2.1 grams per hundred cubic centimeters) and water flavored with peppermint oil. Misbranded because statements on label, "Alcoholic Over Indulgence" and "Where Used in the Treatment of Active Peptic Ulcers," were false and misleading, since this was not an adequate treatment for those conditions. Also misbranded because of false label claim, "Combines with at least 12 times its volume of N/10 Hydrochloric Acid," since the volume of aluminum hydroxide that it contained was sufficient to combine with only 8.08 volumes of N/10 hydrochloric acid. Further misbranded because statement on label, "Contents 8 Fl. Oz." was false and misleading since the package contained less than 8 fluid ounces.—[*D. D. N. J., F. D. C. 589; November 1942.*]

McCollum's Vitamin A and D Tablets.—McCollum Laboratories, Hollywood, Calif. Shipped between July 12 and 25, 1941. Adulterated because strength differed from, and quality fell below, that which it was represented to possess, namely, "Each tablet contains 3,000 International Units of vitamin A and 300 International Units of vitamin D," since each tablet contained much less than these respective amounts. Misbranded because the claim was false and misleading. Also adulterated and misbranded under provisions of law applicable to foods, as reported in F. N. J. 2989.—[*D. D. N. J., F. D. C. 569; November 1942.*]

Newbro's Herpicide.—Herpicide Company, New York. Shipped Oct. 14, 1940. In two forms "Regular" and "Odorless." Composition: analysis showed both forms to consist essentially of salicylic acid, glycerin, water, alcohol and small amounts of brucine and aromatics. Misbranded because of false and misleading representations on label that it would be efficacious in treating obstinate dandruff, falling hair and general scalp and hair disorders. Further misbranded because label did not list the common or usual names of the active ingredients.—[*D. D. N. J., F. D. C. 586; November 1942.*]

New Food.—Parke D. Brollier, trading as Parke-Lee Food Company, Lorain, Ohio. Shipped Feb. 8, 1940. Composition: ground and roasted flaxseed. Misbranded because of false and misleading label representations that this was "an entirely new type of food . . . contains an all-vegetable mucin (mucilage) . . . an excellent auxiliary food"; that it possessed such nutritional value as to supply important amounts of minerals, fats and proteins and thus give extra nourishment and strength, besides furnishing an appreciable amount of mucin, whereas it would be without value for such purposes. Further misbranded because claim, "This food will be a pleasant and effective addition to the diet of any person of any age," falsely implied that the product would supply vitamin constituents which are lacking in modern foods or might have been destroyed by modern methods of preparation. Also misbranded because of statement, ". . . eminent food authorities are agreed that there exists a certain fatty acid deficiency, principally a deficiency of Linolic, Insolinolic and Linolinic or Unsaturated Fatty Acids (Vitamin 'F')," whereas authorities are not agreed that the term "vitamin 'F'" is a proper name to be applied to the unsaturated fatty acids, nor are they agreed that there are fatty acid deficiencies in the ordinary human diet. Misbranded again because falsely represented to be an effective treatment of symptoms of diabetes, stomach and intestinal ulcers, high blood pressure and indigestion, besides enabling diabetic persons to reduce their sugar, helping them to remain sugar free and giving them extra nourishment and strength. Further misbranded because label did not conspicuously bear the common or usual name of the contents, namely, flaxseed or linseed. This product was also misbranded under the provisions of the law applicable to foods, as reported in F. N. J. 2820.—[*D. D. N. J., F. D. C. 574; November 1942.*]

Orrine No. 1.—Orrine Company, Washington, D. C. Shipped between April 9 and Aug. 20, 1940. Composition: essentially gold chloride, hyoscine hydrobromide, ammonium, chloride, and cinchona alkaloids. Misbranded because of false and misleading representations on label that treatment would be efficacious in lessening or relieving the desire or craving for liquor.—[*D. D. N. J., F. D. C. 584; November 1942.*]

Pinolator Inhaler and Medicament.—Pinolator Company, Minneapolis. Shipped Jan. 2, 1941. Composition: the medicament bore the name "Breath O' The Forest," and was found to consist essentially of menthol, camphor, pine oil, thymol and a benzoate dissolved in a mixture of alcohol (60 per cent or 288 minims per fluid ounce) and water. Misbranded because label represented product to provide soothing relief and comfort in symptoms of common colds, sinus, bronchitis, asthma and hay fever and enable the user to "pass through the worst hay fever season without serious discomfort." Also misbranded because claim on bottle label and carton, "Ethyl alcohol 69%, 330 minims per ounce" was false and misleading, and because carton did not declare the name of each active ingredient or the quantity, kind and proportion of alcohol or the quantity of contents.—[*D. D. N. J., F. D. C. 583; November 1942.*]

DANGEROUS TO HEALTH

Because of Inadequate Warnings on Labels

[EDITORIAL NOTE.—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they deal with nostrums which were misbranded because their labels failed to carry adequate warnings against giving them to children or using them in those pathologic conditions in which they might be dangerous to health, or caution against unsafe dosages or methods or duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Bron-Chu-Lino Emulsion.—Johnstone Drug Sales Corporation, Rochester, N. Y. Shipped July 17, 1941. Composition: essentially creosote, calcium, sodium and phosphorus compounds, benzyl alcohol, methyl salicylate and gum acacia emulsified in a mineral oil. Misbranded because label carried false claims regarding the alleged curative powers of these drugs. Further misbranded because labeling failed to bear adequate warnings against use in those pathologic conditions such as persistent cough or high fever, wherein this product might be dangerous to health, or to caution against unsafe duration or administration.—[*D. D. N. J., F. D. C. 611; February 1943.*]

Comfortt Tablets.—Shipper's name not reported. Shipped March 30, 1940, from St. Louis to College Laboratories, Inc., Denver, who repackaged product in such a way that it was misbranded. Composition included acetaphenetidin, aspirin and caffeine. Declared misbranded because of inadequate directions for use on the label and because of insufficient warning against use in those pathologic conditions wherein it might be dangerous to health, and lack of caution against unsafe dosage or duration of administration, for protection of users, since label failed to warn that frequent or continued use might cause serious blood disturbances and that not more than the recommended dose should be taken. Further misbranded because one ingredient, aspirin, was listed on the label, not by its common or usual name, but by its chemical name, acetylsalicylic acid.—[*D. D. N. J., F. D. C. 613; February 1943.*]

Doctor's Daughter Tablets and Dr. Wilbur's Laxative Tablets.—Dr. John Wilbur Daughter Company, Westerly, R. I. Shipped April 16, 1941. Composition: first-named product essentially calcium carbonate, sodium carbonate and sodium bicarbonate; "Laxative Tablets" essentially belladonna alkaloids, including atropine, and laxative plant drugs. Misbranded because of lack of adequate warning on labeling against use by children or in those pathologic conditions wherein it might be dangerous to health, or against unsafe methods or duration of administration or application, for protection of users, since labeling did not warn that frequent or continued use might cause dependence on laxatives and that the product should not be taken when symptoms of appendicitis such as nausea, vomiting or abdominal pain are present. Also misbranded because carton did not give common or usual names of active ingredients or state the quantity or proportion of belladonna alkaloids present in the laxative tablets. Again misbranded because the envelope containing the latter did not declare the quantity or proportion of belladonna alkaloids or common or usual names of all the active ingredients, since "Ext" and "phodophyllui"(?) did not inform that "extract" and "podophyllum" were meant. Misbranded further in that the carton label did not accurately state quantity of contents since no reference was made to the envelope containing the 25 laxative tablets.—[*D. D. N. J., F. D. C. 554; November 1942.*]

Dye's Compound Tablets and Dye's Laxative Pellets.—Dr. J. H. Dye Medical Company, Buffalo. Shipped between May 8 and June 10, 1941. Composition: first-named product consisted of plant extractives including valeric acid and plant drugs containing alkaloids; the laxative pellets were aloin, podophyllum resin and hydrastis. The pellets were misbranded because labeling did not give adequate directions for taking them, or sufficient warnings against use in pathologic conditions wherein the product might be dangerous to health, or caution against unsafe duration of administration, for protection of user, particularly in absence of warning that frequent and continued use might result in dependence on a laxative and that a laxative should not be taken when symptoms of appendicitis are present, such as nausea, vomiting and abdominal pain. Further misbranded because of false and misleading representations that the pellets would effectively relieve headache, coated tongue, bad breath, aggravated pimply skin, lassitude, indigestion and other distressing symptoms due to temporary constipation. "Dye's Compound Tablets" misbranded because of false and misleading label representations to the effect that they would relieve symptoms of functional dysmenorrhea and other female irregularities, and accompanying conditions such as headache, nervousness, irritability, backache, nausea, rings under eyes, melancholia, hysteria, loss of appetite and pains in various parts of the body; that they would build up physical resistance, improve digestion and help one to obtain more nourishment; that they would promote happy life and increase vitality and personal magnetism, and would be an appropriate preventive and treatment for amenorrhea, dysmenorrhea, menopause, menorrhagia, metritis and ovaritis.—[*D. D. N. J., F. D. C. 614; February 1943.*]

Fernol Concentrate.—Fernol Company, Chicago. Shipped between Feb. 21 and Nov. 15, 1941. Composition: essentially epsom salt, extract of cascara sagrada and small amounts of magnesium carbonate, sodium phosphate, salt and iron, with ammonium citrate, a sugar, saccharin, alcohol and water. Misbranded because labeling failed to warn sufficiently against use by children, to whom it might prove dangerous to health, or against unsafe dosage or methods or duration of administration, for protection of users, since label did not caution that frequent or continued use of the product might result in dependence on laxatives. Further misbranded because label warning against using preparation when symptoms of appendicitis are present was not sufficiently conspicuous to make it easily read by the ordinary individual. Again misbranded because name "Fernol" and statements on the label falsely suggested that the article was an appropriate and effective treatment for obesity. Also misbranded because label declaration of contents failed to reveal the material fact that the effect of the mixture was due essentially to its epsom salt, that the other ingredients mentioned were present in relatively inconsequential amounts and that some of them, namely, sodium chloride (common salt), iron and ammonium citrate, saccharin, dextrose (grape sugar) and caramel color (burnt sugar) were not active ingredients.—[*D. D. N. J., F. D. C. 615; February 1943.*]

Prostatic Absorbent.—C. F. Breitenbach (Mucine Company), Chicago. Composition: ichthammol, juniper oil and extracts of plant drugs incorporated in wool wax (lanum). Misbranded because of various false representations, such as "soothing and relieving chronic conditions of the prostate and bladder neck." Further misbranded because label failed to bear name and place of business of manufacturer, packer or distributor, since designation "Ainsworth Specialty Co., Kansas City, Mo.," did not make clear this concern's connection with the product, and because label did not give the common or usual name of each active ingredient, or its quantity. Also misbranded because label did not contain adequate directions for taking, or sufficient warnings against use by children, or in those pathologic conditions in which it might be dangerous to health, or caution against unsafe dosages or methods or duration of administration or application, for protection of user.—[*D. D. N. J., F. D. C. 436; September 1942.*]

Prunlax.—Adams Laboratories, Inc., St. Louis. Shipped between Oct. 11 and 14, 1940. Composition: essentially extracts of plant materials including laxative plant drugs, with sugar, glycerin, flavoring materials and water, preserved with salicylic acid. Misbranded because label directions for adults and children were neither appropriate nor adequate; because label failed to caution against use by children, or in those pathologic conditions wherein it might be dangerous to health, or warn against unsafe dosage or duration of administration, for protection of users, since label did not caution the user that Prunlax was not to be taken in cases of appendicitis and that frequent or continued use might result in dependence on laxatives. Further misbranded because name "Prunlax" falsely implied that the product was derived from prunes, which it was not; also misbranded because of misrepresentation that the absence of phenolphthalein and alcohol from the formula was evidence that the product contained no potentially harmful or deleterious ingredients, when such was not the case. A few other charges of misbranding also were cited.—[*D. D. N. J., F. D. C. 452; September 1942.*]

Starr's Wonderful M. L. & K. Pills.—Starr Medicine Company, San Francisco. Shipped April 1, 1941. Composition: essentially extracts of plant drugs, including laxatives, with coating of calcium carbonate. Misbranded because label failed to warn sufficiently against use in those pathologic conditions wherein the product might be dangerous to health, and against unsafe duration of administration, since the label failed to caution that the product was not to be taken in the presence of symptoms of appendicitis, such as nausea, vomiting or abdominal pain, or that continued use might result in dependence on a laxative. Misbranded also because label failed to give adequate directions for use as a laxative. Further misbranded because of false and misleading label claims, since the product contained no ingredients which would constitute treatments for conditions quoted: ". . . Used in weak back, liver, kidney complaints, biliousness . . . cold, fever, headaches, indigestion." Also misbranded because label did not accurately declare quantity of contents.—[*D. D. N. J., F. D. C. 555; November 1942.*]

Volpaus Pills.—F. W. Briggs and Company, Buffalo. Shipped June 2, 1941. Composition: essentially aloes, ferrous sulfate, myrrh and starch, with volatile oils, including savin oil, and a coating of sugar and chalk. Misbranded because directions on carton and in circular were not appropriate for the administration of a laxative. Also misbranded because labeling failed to warn against use in those pathologic conditions wherein it might be dangerous to health, or against unsafe dosage or methods or duration of administration, for protection of users, since warning in circular failed to state that product should not be taken in the presence of symptoms of appendicitis, such as vomiting, nausea or abdominal pain and that frequent or continued use might result in dependence on a laxative. Further misbranded because not effective, as represented, for delayed menstruation even when taken under medical supervision and also because the warning to avoid all laxatives in case of symptoms of appendicitis did not reveal that this treatment itself is a laxative.—[*D. D. N. J., F. D. C. 557; November 1942.*]

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Sept. 18, page 169.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Nov. 15-17 and Jan. 17-19. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written. Part I.* Various centers, Jan. 21. Final date for filing application is Oct. 21. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22, N. Y.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Locally, Feb. 12. Final date for filing application is Nov. 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh, Pa.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral. Parts I and II.* Chicago, Oct. 8-9. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Written and Oral. Part II.* Chicago, Jan. 21-22. Sec., Dr. Guy A. Caldwell, 3503 Prytania St., New Orleans, Louisiana.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, October. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City, Iowa.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Feb. 4. *Oral.* Philadelphia, March 25-26, and San Francisco, May 6-7. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Written.* Locally, Oct. 30. *Oral.* Locally, Dec. 20-21. Final date for filing application is Sept. 30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: February. Final date for filing application is Dec. 15. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: *Oral.* Chicago, February. *Written.* Various centers, December. Final date for filing application is Nov. 1. Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Cerebral Hemorrhage Resulting in Partial Paralysis Following 16 Inch Fall.—Ale, a man of 63, had had "a high blood pressure condition" which "had been reduced to a normal range" sometime before the industrial accident occasioning the litigation here discussed. In the course of his employment as a "general repair man" in the oil fields he was using both hands in tightening a nut on an eccentric power when the wrench he was using slipped from the nut, causing him to fall backward from the concrete platform on which he was working to the ground, some 16 inches below. In falling he struck a pipe with his back. He noticed immediately that "his back had been slightly injured and that his left foot had become numb and that his left toe was dragging." He went home immediately and has not been able to work since. That night he vomited. The next day his condition was worse and he consulted a physician. He grew worse and several days later was sent to a hospital, eventually losing complete control of his left leg. Attributing his condition to the industrial accident, he instituted proceedings under the Oklahoma workmen's compensation act. At the hearing the medical witnesses were in agreement that Ale had a partial paralysis caused by a cerebral hemorrhage and that this was the proximate cause of his disability. The industrial commission found that the fall sustained in the course of Ale's employment had aggravated a preexisting condition and brought on the cerebral hemorrhage which resulted in partial paralysis. An award of compensation was accordingly made in his favor. The employer and his insurance carrier then instituted an original proceeding in the Supreme Court of Oklahoma to obtain a review of the award.

The petitioners contended that the finding by the commissioner that the workman's paralytic condition resulted from the accidental injury he sustained from the fall was without the support of any competent evidence. The court then undertook to discuss some of the evidence before the commission. None of the physicians, said the Supreme Court, who testified at the hearing testified directly or positively that in their opinion the hemorrhage and the resulting paralysis were caused by the fall but, on examination of the medical testimony coupled with the time of the injury, the inferences and circumstances of the disability, we must conclude that the commission had some substantial evidence on which to base an opinion that the fall was at least a contributing cause of the hemorrhage. The medical testimony is to the effect that there are four possible conditions which may give rise to a disability of the nature here involved: (1) strain, (2) stress (the fall), (3) anger and (4) advanced years in general. There is no evidence of the presence of any of these conditions except the fall and the age of the workman. Dr. Wilkins, who was called as a witness by the employer and his insurance carrier, stated:

> Generally, we just think if he had marked symptoms at the time he fell down then you would say this fall precipitated it, that maybe it didn't cause it entirely but at least was the precipitating factor.

With respect to the existence of "marked symptoms" at the time he fell, the workman's testimony as to what happened after the fall is significant. He stated that he first walked to his car, which was about 50 feet away, and that his left toe was practically dragging on the ground. The first marked symptom then was present immediately after the fall. Again, Dr. Wilkins testified:

> yet there is a sufficient chain of events from that period (that is, the time of the fall) to cause me to say that I am just not able to divorce the man's cerebral condition entirely from the strain and all of falling. Certainly, had he not had the high blood pressure and the diseased vessels, I don't think that fall would have done anything at all.

On direct examination Dr. Wilkins stated that he was not able positively to say that the strain or the fall had anything to do with the cerebral hemorrhage. On the other hand, on cross examination he stated that he would not say that the fall didn't cause the disability. This physician, continued the court, was not called on to testify, one way or the other, as to the positive cause of the disability and in fact, under the circumstances of the case, it would have been impossible for an honest physician, such as this witness appeared to be, to have given a positive answer. The practice of medicine is not an exact science and especially so in regard to the human brain. Summing up the testimony of Dr. Wilkins, however, we believe the commission was justified in concluding that his testimony as a whole was to the effect that he could not account for the workman's condition other than connecting it with the fall. His evidence was really more convincing and more worthy of belief than if he had stated that the disability was or was not caused in whole or in part by the fall. Under all the facts and circumstances surrounding this case the commission had proper grounds to find a causal connection between the fall and the workman's present disability. A finding of fact of the industrial commission on nonjurisdictional grounds when supported by any competent evidence is conclusive on this court.

The award in favor of the workman was accordingly, in effect, affirmed.—*Tidewater Associated Oil Co. v. Ale 130 P. (2d) 991 (Okla., 1942).*

Pharmacy Practice Act (Oregon): Limitation of Sale of Aspirin to Licentiates of Board of Pharmacy Valid.—A section of the Oregon pharmacy practice act (58-307 O. C. L. A.) authorizes the board of pharmacy to license shopkeepers not druggists to sell "simple United States Pharmacopeia, National Formulary and New and Nonofficial Remedies substances or preparations, not of a poisonous nature, in the original unbroken packages only," and prohibits the sale of such substances except by licensed shopkeepers or licensed pharmacists. The section provides, however, that no license is required to sell certain articles such as olive oil, glauber salts, vaseline,

carbonate of soda, borax, witch hazel, epsom salt "and other such articles and items as may hereafter be specifically listed, enumerated and exempt from the provisions of this act by proper order and regulation of the board of pharmacy," provided such products shall be sold in unbroken packages only. The defendant, who operated a store and who was not a licensed druggist or a licensed shopkeeper, was convicted in a justice's court of the crime of selling a package of aspirin tablets without having obtained a permit or license from the board of pharmacy, and his conviction was upheld on appeal by the circuit court, Wheeler County, Ore. The defendant then appealed to the Supreme Court of Oregon.

The United States Pharmacopeia, the National Formulary and New and Nonofficial Remedies, said the court, are official publications, of which this court may take judicial knowledge. The pharmacy practice act itself takes cognizance of those publications. Acetylsalicylic acid—commonly known as aspirin—is recognized as a drug or medicine in the official publication of the United States Pharmacopeia, ed. 12, pp. 13, 14 and 15. Aspirin is not an entirely harmless drug or medicine, especially when taken in excessive doses. Undoubtedly the sale of medicines is a business subject to regulation under the police power by legislation reasonably necessary to protect the public health and morals. The mere fact that aspirin is a simple household remedy does not preclude the regulation of its sale. As was said in *State Board of Pharmacy* v. *Matthews*, 197 N. Y. 353, 90 N. E. 966:

> There are strong reasons relative to the public welfare which make it proper that regulations concerning the sale of drugs and medicines should not be confined to poisons but may be extended so as to embrace what are known as harmless household remedies—that is, which may be harmless if properly prepared. The injury to the public health which might ensue if such medicines were carelessly or ignorantly compounded so as to contain deleterious ingredients or deceptively, so as to be something different from what they purported to be, is manifest. The police power logically extends to such medicines no less than to poisons and other lethal medicinal agents.

Of course, the regulations relative to the sale of medicines cannot be arbitrary or capricious but must have some reasonable relation to the end to be attained, namely the protection of the public.

The defendant first contended, in effect, that the board of pharmacy acted arbitrarily and unreasonably in classifying aspirin—a simple household remedy—as one which could be sold only by a duly licensed person. In other words, the defendant argued that by thus restricting the sale of aspirin the welfare of the public is not subserved. The court, however, did not agree with this contention. We see no unlawful delegation of legislative authority to the board, said the court, in this case. The legislature itself classified aspirin as a medicine which may be sold only by a duly licensed person. Its status as a drug or medicine was fixed by the legislature in view of the fact that it is a simple United States Pharmacopeia and National Formulary remedy and is not within the exempted class of drugs or medicines enumerated in the act. Neither has it been shown that the board, in the exercise of its discretion, has seen fit to add aspirin to those medicines or drugs exempted from the operation of the act. As a matter of fact, the board in a regulation promulgated by it specifically prohibited the sale of aspirin except by licensed pharmacists and by licensed shopkeepers. That regulation is merely declaratory of the statutory classification of aspirin and was wholly unnecessary, since it is clear that the pharmacy practice act specifically makes it a crime for a person not a licensed shopkeeper or a licensed pharmacist to sell aspirin.

The defendant next contended that the pharmacy practice act for the violation of which he was convicted is unconstitutional in that the restriction relative to the sale of aspirin is arbitrary and unreasonable. If, said the court, the provisions of the pharmacy practice act are in fact arbitrary and unreasonable and bear no reasonable relation to the public health, their enactment and enforcement is not a valid exercise of the police power. Under the due process clause of the constitution no person can be arbitrarily or unreasonably restricted in the transaction of legitimate business. However, the constitutionality of similar statutes regulating the sale of drugs and medicines has been sustained in other jurisdictions. For instance, in *State* v. *Woolworth Co.*, 184 Minn. 51, 237 N. W. 817, the court upheld the constitutionality of an act restricting to licensed pharmacists the sale of milk of magnesia. In disposing of the contention that such restriction was arbitrary and unreasonable, the court said:

> We are not prepared to say that having a licensed pharmacist in charge of the sale of medicines, even if harmless and sold in original packages, has no reasonable relation to public health and cannot be of public benefit.

Is it, continued the court, arbitrary and unreasonable for the legislature to prohibit the sale, except by licensed pharmacists and licensed shopkeepers, of aspirin? If there is any reasonable basis which the court can conceive for such regulation, it must be sustained as a valid exercise of the police power. The pharmacy practice act authorizes the board to employ inspectors to investigate all complaints as to the quality and strength of all pharmaceutical preparations and medicines and to take such action as may be necessary to prevent the sale of such as do not conform to the standard and tests prescribed in the official publications noted in the statute. Such inspection undoubtedly would aid in guarding against the sale of impure drugs and medicines. It would also enable the board to ascertain whether aspirin was being sold in standard doses. We think it is highly proper for the board, acting for the welfare of the public, to know who is dealing in drugs and medicines and such knowledge can best be obtained by requiring dealers to procure a license. The act does not discriminate against certain classes of shopkeepers, as all who obtain a license may sell aspirin. The grievance of the defendant—reduced to its ultimate analysis—is that the board failed to add aspirin to the list of drugs and medicines exempt from the operation of the act.

The court concluded that there was a reasonable basis for the legislation in question, as the regulation of the sale of the drugs in question tended to promote the public health. The judgment of conviction was therefore affirmed.—*State v. Combs, 130 P. (2d) 947 (Ore., 1942).*

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Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 10-13. Dr. W. L. Benedict, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Public Health Association, New York, Oct. 12-14. Dr. Reginald M. Atwater, 1790 Broadway, New York, Executive Secretary.

Association of Military Surgeons of the United States, Philadelphia, Oct. 21-23. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.

Delaware, Medical Society of, Wilmington, Oct. 12-13. Dr. W. O. La Motte, 601 Delaware Ave., Wilmington, Secretary.

District of Columbia, Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Secretary.

Indiana State Medical Association, Indianapolis, Sept. 28-30. Mr. T. A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 26-29. Dr. Arthur G. Sullivan, 16 North Carroll St., Madison, Wis., Managing Director.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 4-6. Dr. William M. Korth, 1115 Grand Ave., Kansas City, Mo., Secretary.

Kentucky State Medical Association, Louisville, Oct. 4-6. Dr. P. E. Blackerby, 620 South Third St., Louisville, Acting Secretary.

Mississippi Valley Medical Society, Quincy, Ill., Sept. 29-30. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Oklahoma City Clinical Society, Oklahoma City, Oct. 18-21. Dr. Clark H. Hall, 117 North Broadway, Oklahoma City, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 25-29. Dr. J. D. McCarthy, 1026 Medical Arts Bldg., Omaha, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 5-7. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.

Southern Medical Association, Cincinnati, November 16-18. Mr. C. P. Loranz, Empire Building, Birmingham, Alabama, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 25-27. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

25:719-874 (June) 1943

Experiments with Calculated Therapeutic and Toxic Doses of Digitalis: III. Effects on Coronary Blood Flow. W. H. Dearing, H. E. Essex, J. F. Herrick and A. R. Barnes.—p. 719.

Id.: IV. Effects on Cellular Structure of Central Nervous System. W. H. Dearing, A. R. Barnes, J. W. Kernohan and H. E. Essex.—p. 734.

Effects of Digitalis, Urginin, Congestive Cardiac Failure and Atropine on Hyperactive Carotid Sinus. A. D. Nichol and H. Strauss.—p. 746.

Effect of Quinidine on Sinus Tachycardia, Including Production of Transient Bundle Branch Block. P. S. Barker, F. D. Johnston and F. N. Wilson.—p. 760.

Auricular Paroxysmal Tachycardia with Auriculoventricular Block. P. S. Barker, F. N. Wilson, F. D. Johnston and S. W. Wishart.—p. 765.

Auricular Paroxysmal Tachycardia with Alternation of Cycle Length. P. S. Barker, F. D. Johnston and F. N. Wilson.—p. 799.

Capillary Blood Pressure in Man. Direct Measurements in Digits of Patients with Raynaud's Disease and Scleroderma Before and After Sympathectomy. L. W. Eichna.—p. 812.

American Journal of Clinical Pathology, Baltimore

13:231-284 (May) 1943

Sternal Marrow in Banti's Syndrome and Other Splenomegalic States: Effect of Splenectomy. L. R. Limarzi, R. M. Jones, J. T. Paul and H. G. Poncher.—p. 231.

Erythrocyte Aplasia Following Sulfathiazole. Anne Marie Strauss.—p. 249.

Hodgkin's Disease: Pathologic Classification. S. R. Bersack.—p. 253.

"Atypical" Gaucher's Disease. J. V. Petit and E. M. Schleicher.—p. 260.

Case of Infiltrating Hydatidiform Mole. L. D. Moss and J. A. Wintermantel.—p. 267.

Struma Ovarii: Report of 2 Cases. S. Sailer.—p. 271.

Evaluation of Laboratory Procedures in Determination of Basal Metabolic Rate. L. E. Nolan.—p. 278.

American Journal of Diseases of Children, Chicago

65:827-990 (June) 1943

Influence of Minor Dietary Changes on Frequency of Infants' Stools: Study of Effect of Varying Content of Lactose, Milk Fat and Thiamine. I. J. Wolman and S. Borowsky.—p. 827.

Basal Metabolism of Normal Boys and Girls from Two to Twelve Years Old, Inclusive: Report of Further Study. R. C. Lewis, Anna Marie Duval and Alberta Iliff.—p. 834.

Basal Metabolism of Normal Children from Thirteen to Fifteen Years Old, Inclusive. R. C. Lewis, Anna Marie Duval and A. Iliff.—p. 845.

Serum Cholesterol Values for Infants and Children. R. G. Hodges, W. M. Sperry and Dorothy H. Andersen.—p. 858.

Diagnosis of Juvenile Psychosis. M. Sherman and H. Jost.—p. 868.

*Immunity to Tetanus Induced by Third Dose of Toxoid Two Years After Basic Immunization: Based on Study of Thirty-One Allergic Children. M. M. Peshkin.—p. 873.

Congenital Malformations Induced in Rats by Maternal Nutritional Deficiency: IV. Cleft Palate. J. Warkany, Rose C. Nelson and Elizabeth Schraffenberger.—p. 882.

Attempts to Enhance Virulence of Hemophilus Pertussis by Serial Passage in Mice. L. P. Strean.—p. 895.

Electroencephalography on Children. N. L. Low.—p. 898.

Congenital Idiopathic Cardiac Hypertrophy. A. N. Rosen.—p. 903.

Enzymatic Debridement in Local Treatment of Burns: Preliminary Report. G. R. Cooper, G. B. Hodge and J. W. Beard.—p. 909.

Immunity to Tetanus.—Two years after the completion of basic immunization with two 0.5 cc. doses of combined alum precipitated diphtheria and tetanus toxoids, Peshkin gave to 31 allergic children a third, or "booster," dose of 0.5 cc. (18 children received combined alum precipitated toxoids and 13 children alum precipitated tetanus toxoid alone). Antitoxin levels were determined at various intervals after the second and after the third dose of the toxoid, and the respective totals of 159 and 194 specimens of blood serum were titrated for tetanus antitoxin. The incidence of local reactions after the third dose of combined toxoids, after the third dose of tetanus toxoid alone and after the basic immunization was 50, 25 and 25 per cent respectively. An elevation of temperature which lasted from one to two days occurred only after the third dose of combined toxoids in 22 per cent of the children. This incidence of febrile reactions contrasts with 3 per cent in the group of 65 children given a third injection of combined toxoids from three to fifteen months after basic immunization and with 1 per cent in the group given only the basic immunization. The injection of a third, or "booster," dose of combined alum precipitated diphtheria and tetanus toxoids and alum precipitated tetanus toxoid alone into allergic children two years after the completion of basic immunization with two doses of combined toxoids was followed within one month by an adequate tetanus antitoxin titer, which was always higher and lasted for a much longer period than that which followed basic immunization as well as that which followed the third dose of combined toxoids given from three to fifteen months after basic immunization. The antitoxin titer obtained on the seventh day after the third injection of toxoid given two years after basic immunization was always adequate and at its maximum in the majority of instances. Comparison of the initial antitoxin levels and the corresponding titers one month and two years after administration of the "booster" dose of toxoid for one group of children two years after basic immunization and for another group from three to fifteen months after immunization and for a final group given basic immunization only revealed not only that the percentage of the first group of children attaining the highest antitoxin levels (0.5 to 1 unit or more of antitoxin) within one month of receiving their last dose was significantly higher than that of either of the last two groups (100, compared with 70 and 32 per cent respectively) but that two years later the ratio between the patients of the three groups who showed an antitoxin titer of 0.1 unit or more was 4:1 (72 and 18 per cent respectively) for the children of the first and the second groups and 8:1 (72 and 9 per cent respectively) for the children of the first and the third groups. When a child has had basic immunization with two doses of combined alum precipitated diphtheria and tetanus toxoids and a third, or "booster," injection of toxoid is administered two years later, then alum precipitated tetanus toxoid alone should be used in order to keep febrile, local and systemic reactions at the minimum.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

49:719-854 (June) 1943

*Roentgenologic Changes in Small Intestine in Presence of Hookworm. G. R. Krause and J. A. Crilly.—p. 719.

Roentgenographic Obstetric Pelvicephalometry in Erect Posture. R. P. Ball and R. Golden.—p. 731.

Analysis of Roentgen Pelvimetry by Johnson Stereoroentgenometer in 379 Cases. J. N. Ané and L. J. Menville.—p. 742.

Roentgenologic Localization of Placenta Without Contrast Media. R. M. Smith.—p. 750.

Syphilitic Spondylitis. E. Freedman and I. Meschan.—p. 756.

Angiocardiography in Congenital Heart Disease: II. Intracardiac Shunts. M. F. Steinberg, A. Grishman and M. L. Sussman.—p. 766.

Miliary Calcification of Lung. E. F. Geever.—p. 777.

Layer Formation in Pyelography. Alice Ettinger.—p. 783.

Variability in Onset of Ossification in Epiphyses and Short Bones of Extremities. I. Pyle and L. W. Sontag.—p. 795.

Radiation Treatment of Lymphangioma. G. W. Holmes and L. E. Hawes.—p. 799.

New Type of Radium Loading Protective Device. A. H. Dowdy, B. DuBilier and D. B. Cowie.—p. 803.

Artificial Decrease of Radiosensitivity of Skin and Mucous Membranes in Roentgen Therapy. P. Lehmann.—p. 811.

Cavernous Hemangioma of Face in Infant Treated with Radium: Report of Case. A. W. Jacobs.—p. 816.

Isodose Charts for Fields of Special Usefulness in Treatment of Cancer of Uterine Cervix. S. M. Silverstone, C. B. Braestrup and B. S. Wolf.—p. 819.

Roentgenologic Changes in Small Intestine in Presence of Hookworm.—Krause and Crilly show that infection with the hookworm, Necator americanus, causes alterations in the small intestine which they designate as the "deficiency pattern." If this pattern is seen, the stools should always be examined for the ova of intestinal parasites. The authors studied the small intestine of 97 young white men who were known to harbor Necator americanus and who had no other disease known to cause the deficiency pattern. Of the 44 patients with

clinically significant "hookworm disease," 40 showed the deficiency abnormalities, which were moderately or far advanced in 26. Of the 53 patients with asymptomatic, incidental hookworm infection, 33 had a normal small intestine, 16 showed minimal variations from the normal and only 4 had severe alterations of the normal pattern. After anthelmintic therapy alone there was a return toward, but not to, the normal pattern, in those with severe involvement. Minimal alterations disappeared entirely in some instances. A significant correlation exists between the presence and extent of the physiologic alterations seen on the roentgenograms, the clinical findings and the severity of the infection with the hookworm.

Annals of Internal Medicine, Lancaster, Pa.

18:913-1052 (June) 1943

*Comparison of Metabolic Effects of Isocaloric Meals of Varying Composition with Special Reference to Prevention of Postprandial Hypoglycemic Symptoms. G. W. Thorn, J. T. Quinby and M. Clinton Jr. —p. 913.
Problems of Internist in Navy. R. E. Duncan.—p. 920.
Medical Care of Aviation Personnel. D. N. W. Grant.—p. 926.
Peptic Ulcer in United States Navy. V. W. Logan and P. W. Bransford.—p. 929.
Military Neuropsychiatry in Present War. E. H. Parsons.—p. 935.
Psychoneuroses in Wartime. L. H. Ziegler.—p. 941.
Treatment of Functional Gastrointestinal Disturbances of Neuropsychiatric Origin. J. C. Yaskin.—p. 949.
Fever Therapy. G. B. Tayloe.—p. 968.
Relation of Carrier to Epidemic Meningitis. J. H. Mueller.—p. 974.
Carcinoma of Lung: Review of 31 Proved Cases at Philadelphia Naval Hospital. F. Fetter.—p. 978.
Problems of Fluid Balance in Traumatized Patient. J. E. Rhoads. —p. 988.
Relation of Crush Syndrome to That of Burns and Other Types of Traumatic Wounds of Human Tissues. W. E. Lee.—p. 991.
35 Mm. Films in Diagnosis of Chest Conditions. E. C. Boots.—p. 997.
Acute Nephritis and Effect of Sulfonamides on Kidneys. F. D. Murphy and W. D. Wood.—p. 999.
Medical Aspects of High Altitude Flight. D. N. W. Grant.—p. 1006.
Present Status of Clinical Electroencephalography. F. A. Gibbs.—p. 1012.
*Observations on Immunity in Mumps. J. F. Enders.—p. 1015.

Prevention of Hypoglycemic Symptoms.—According to Thorn and his associates ingestion of a typical American breakfast—one relatively high in carbohydrate and low in protein and fat content—predisposes to midmorning hypoglycemic symptoms. The prolonged sense of well-being which follows the ingestion of a meal rich in protein suggested that the intake of increased protein at breakfast might obviate the necessity for midmorning nourishment and might be expected to improve the performance of individuals who do not have access to supplementary nourishment at that time. Studies were undertaken to determine the changes in blood sugar level, caloric distribution and metabolic rate which followed the ingestion of isocaloric breakfasts composed of varying proportions of carbohydrate, fat and protein. In a normal subject the ingestion of a breakfast high in carbohydrate and low in protein and fat was followed by hypoglycemic symptoms in one to two hours; an isocaloric breakfast high in fat and low in carbohydrate and protein was followed by hypoglycemic symptoms at a later hour; an isocaloric breakfast high in protein and low in fat and carbohydrate was followed by an improved sense of well-being and no symptoms of hypoglycemia. The blood sugar levels following these three types of breakfast correspond closely to the clinical symptoms. A sustained increase in metabolic rate occurred following the ingestion of the high protein breakfast; a transient increase in metabolic rate followed by a fall below the basal metabolic rate was observed after the ingestion of an isocaloric high carbohydrate breakfast; no significant increase in metabolic level followed the ingestion of an isocaloric high fat breakfast. Following the ingestion of the high carbohydrate breakfast, differential derivation of calories reflected striking fluctuations in the character of the food substances utilized as sources of energy. These fluctuations did not occur following the isocaloric high protein and high fat meals.

Immunity in Mumps.—Enders found that infection of the rhesus monkey with the virus of mumps leads in a short time to the appearance of specific complement fixing antibodies which are not present in normal susceptible animals. These antibodies may persist in the blood for many months. Serums from patients with mumps at comparable periods of the disease have given results analogous to those noted in the animal experiments. In man as in the monkey, specific complement fixing antibodies are usually absent in the earliest stage of the disease, appear shortly thereafter, increase and then decrease to persist for at least some months following recovery. These observations have led to the application of the test as an aid in the diagnosis of cases of encephalitis without definite parotitis, suspected on clinical grounds of being attributable to infection with the virus of mumps. It became of great interest to ascertain whether the complement fixing antibody was present or absent in the serums of normal individuals, since its presence might be taken to denote previous infection with the virus whether or not this had led to clinically apparent disease. Conversely, its absence might be assumed to indicate susceptibility. The author presents results of studies on 163 persons at the Harvard Medical School. Antibodies occurred in about 92 per cent of the serums of those giving a positive history of mumps. In sharp contrast, 50 per cent of the serums of those who denied having had the disease contained antibodies. Thus it seems possible that nearly half of those who denied having had mumps underwent an inapparent or "silent" infection which should render them insusceptible. On the other hand, it seems that those in whose serums antibodies could not be demonstrated are potentially susceptible. The experiments with the children yielded data of the same sort, but, as could be expected in this age group, the percentage of negative reactors with negative histories was greater. The author developed a skin test which was positive in cases with a history of mumps and in which the complement fixation test was negative. The results strongly imply that a positive skin reaction indicates a previous infection with the virus, whereas failure to react signifies in most instances potential susceptibility.

Annals of Surgery, Philadelphia

117:801-976 (June) 1943

Management of Cocoanut Grove Burns at Massachusetts General Hospital: Foreword. O. Cope.—p. 801.
Id.: Problems of Hospital Administration. N. W. Faxon.—p. 803.
Id.: Social Service Activities. Ida M. Cannon.—p. 809.
Id.: Neuropsychiatric Observations. S. Cobb and E. Lindemann.—p. 814.
Id.: Resuscitation and Sedation of Patients with Burns Which Include Airway: Some Problems of Immediate Therapy. H. K. Beecher. —p. 825.
Id.: Pulmonary Complications: Clinical Description. J. C. Aub, Helen Pittman and A. M. Brues.—p. 834.
Id.: Roentgenologic Report of Pulmonary Lesions. R. Schatzki.—p. 841.
Id.: Pathology; With Special Reference to Pulmonary Lesions. T. B. Mallory and W. J. Brickley.—p. 865.
*Id.: Treatment of Surface Burns. O. Cope.—p. 885.
Id.: Problems of Infection and Chemotherapy. C. Lyons.—p. 894.
Id.: Procedures in Rehabilitation of Severely Burned. B. Cannon. —p. 903.
Id.: Note on Physical Therapy. A. L. Watkins.—p. 911.
Id.: Problem of Burn Shock Complicated by Pulmonary Damage. O. Cope and F. W. Rhinelander.—p. 915.
Id.: Note on Blood Bank. L. Soutter.—p. 928.
Id.: Note on Thrombophlebitis Encountered. F. D. Moore.—p. 931.
Id.: Metabolic Observations. O. Cope, I. T. Nathanson, G. Margaret Rourke and Hildegard Wilson.—p. 937.

Treatment of Surface Burns.—A feature of the treatment of the 39 burned patients brought to the Emergency Ward of the Massachusetts General Hospital from the Cocoanut Grove night club consisted in omission of débridement and cleansing. Gauze strips saturated with a bland ointment (boric acid) were applied to burned surfaces and kept in place with pressure bandages. Two Gm. of sodium sulfadiazine was injected intravenously through the cannula or needle already in place for plasma transfusion. The dressings were not changed until the fifth to tenth day, when boric acid ointment gauze was reapplied. A major point in favor of nondébridement of the burn is the availability to the wound of chemotherapeutic agents administered internally. Absorption of sulfonamides applied locally to the debrided burn surface may be rapid and irregular and, if the burn surface is large, toxic levels of the drugs in the body fluids may be reached. The levels of the sulfonamide drugs in the body fluids are more easily controlled by internal administration. The advantage of the treatment lies in its simplicity. The available personnel is freed for the care of shock and anoxia, yet the surface wounds need not be neglected.

Archives of Internal Medicine, Chicago

71:741-916 (June) 1943

Note Concerning Long Neglect of Auenbrugger's "Inventum Novum." J. B. Herrick.—p. 741.
Scleroderma Heart Disease: With Consideration of Certain Other Visceral Manifestations of Scleroderma. S. Weiss, E. A. Stead Jr., J. V. Warren and O. T. Bailey.—p. 749.
*Leukemia: Clinical and Pathologic Study of 123 Fatal Cases in Series of 14,400 Necropsies. J. D. Kirshbaum and F. S. Preuss.—p. 777.
Clinical Observations on Osteopetrosis and Myelofibrosis. N. Rosenthal and L. A. Erf.—p. 793.
Profile Printing in Photomicrography of Blood Cells. W. P. Murphy and E. T. Green.—p. 814.
Significance of Glycosuria: I. A. Mirsky and N. Nelson.—p. 827.
Encephalopathy Following Mapharsen Therapy: Pathologic Report with Unusual Findings. A. M. Rabiner, I. S. Freiman and N. Apter.—p. 836.
Postangingal Sepsis. S. Boharas.—p. 844.

Leukemia: Studies on 123 Fatal Cases.—Kirshbaum and Preuss correlate clinical and pathologic observations in all types of leukemia. They examined 123 fatal cases which were selected from 14,400 consecutive autopsies. The cases are classified in three ways: (*a*) according to the clinical course, as acute leukemia or chronic leukemia, (*b*) according to the type of cell in the peripheral blood, bone narrow and tissues, as stem cell leukemia (28 cases), myelogenous leukemia (53 cases), lymphatic leukemia (37 cases) and monocytic leukemia (5 cases), and (*c*) as leukemic or aleukemic disease. Of the patients 69.9 per cent were male, 30.1 per cent were female, 78 per cent were white and 22 per cent were Negro. The high incidence of acute leukemia in the older age groups is unusual. Stem cell leukemia occurs most frequently in persons in the first three decades. Enlargement of the liver and the spleen was most commonly encountered in myelogenous leukemia and less frequently in lymphatic leukemia and stem cell leukemia. Definite anemia was observed in all forms of leukemia. The white blood cell picture showed considerable variability and fluctuation. Attention is drawn to the observation that grave leukopenia may be observed in the early or the late stages of stem cell leukemia and myelogenous leukemia, especially in the acute forms. Advanced thrombopenia may cause a hemorrhagic diathesis. "Myeloid metaplasia" was frequently noted in myelogenous leukemia and stem cell leukemia. Repeated transfusions of blood produced the most beneficial results but gave only temporary relief.

Archives of Neurology and Psychiatry, Chicago

49:793-946 (June) 1943

*Electroencephalographic Foci Associated with Epilepsy. Erna L. Gibbs, H. H. Merritt and F. A. Gibbs.—p. 793.
Effect of Electrical Stimulation on Atrophy of Denervated Skeletal Muscle. D. Y. Solandt, D. B. DeLury and J. Hunter.—p. 802.
Interaction of Electric Shock and Insulin Hypoglycemia: Experimental Investigations. E. Gellhorn and M. Kessler.—p. 808.
Studies on Corpus Callosum: IX. Relationship of Grasp Reflex to Section of Corpus Callosum. A. J. Akelaitis, W. A. Risteen and W. P. Van Wagenen.—p. 820.
Experimental Swelling of Brain. S. Obrador and J. Pi-Suñer.—p. 826.
Schizophrenic Language. J. C. Whitehorn and G. K. Zipf.—p. 831.
Oral and Intravenous Dextrose Tolerance Curves of Patients with Manic Depressive Psychosis. E. F. Gildea, V. L. McLean and E. B. Man.—p. 832.
Syndrome of Involvement of Posterior Cord of Brachial Plexus. R. N. DeJong.—p. 860.
Encephalopathy Following Intravenous Administration of Arsenical Preparations. D. A. Boyd Jr. and L. Nie.—p. 863.
Retrograde Degeneration: Effect of Hemisections on Homolateral Axons of Spinal Cord. A. M. Lassek.—p. 878.
Cervical Syringomyelia and Syringomyelia-like States Associated with Arnold-Chiari Deformity and Platybasia. B. W. Lichtenstein.—p. 881.

Electroencephalographic Foci Associated with Epilepsy.—According to Gibbs and her collaborators the problem of diagnosis and treatment of epilepsy often centers on the question of whether or not localizing signs are present. Electroencephalographic evidence of a focus of abnormal activity is an important localizing sign. In 174 cases (15 per cent) of a total series of 1,161 cases of epilepsy studied at the Boston City Hospital there were found either localizing symptoms or signs on neurologic examination or an electroencephalographic focus. The presumed cause of seizures in these 174 cases was trauma in 69 cases, infection in 20 cases, vascular disease in 14 cases, birth injury in 12 cases and developmental defects in 4 cases. In 55 cases there was no evident cause for the seizures. In 58 per cent of the 160 cases with electroencephalographic foci clinical localizing signs were present, and in all the clinical and electroencephalographic localizations were in agreement. A corroborating electroencephalographic focus was noted in 87 per cent of 106 cases with clinical localizing signs or symptoms. Clinical evidence of localized damage to the brain was fifty-eight times as common in epileptic patients with electroencephalographic foci as in patients in whom the disturbance was generalized or absent. The same types of seizure discharge or other electroencephalographic abnormality were encountered in cases with focal electroencephalographic activity as in cases with nonfocal disorders. However, certain types of abnormality, notably irregular ½ to 3 per second activity, spikes and 2 per second waves and spikes, were much commoner in focal than in nonfocal records. The presence of one of these three types of abnormality is presumptive evidence of localized damage to the brain.

Archives of Otolaryngology, Chicago

37:757-914 (June) 1943

Prevention of Traumatic Deafness: Preliminary Report. W. H. Wilson.—p. 757.
Influence of Avulsion of Trigeminal Nerve on Human Nose. F. L. Lederer and R. Dinelt.—p. 768.
Acute Mastoiditis Masked by Treatment with Sulfonamide Compounds: Clinicopathologic Considerations. G. B. Gilmore.—p. 785.
Deviated Septum: Physicophysiologic Aspect. A. Wachsberger.—p. 789.
Experiments on Conduction of Sound Through Cavity of Middle Ear. H. G. Kobrak.—p. 796.
Treatment of Retroauricular Fistula: Report of 5 Consecutive Cases. E. A. Griffin.—p. 802.
Exact Diagnosis of Otitis Media. R. F. Nelson.—p. 810.
Lymphoepithelioma of Nasopharynx: Report of Case. A. H. Persky.—p. 813.
Sequestration of Osseous Labyrinth. B. Proctor, J. R. Lindsay and W. S. Gonne.—p. 819.
Control of Hemorrhage. W. F. Hulse.—p. 831.
Schmincke Tumor: Lymphoepithelioma of Nasopharynx. H. J. Burman and D. Burman.—p. 835.
Surgery of Mastoid. J. A. Sullivan.—p. 845.
Chronic Progressive Deafness, Including Otosclerosis and Diseases of Inner Ear. G. E. Shambaugh Jr. and F. Wojniak.—p. 856.

Archives of Pathology, Chicago

36:1-126 (July) 1943

Structure and Histogenesis of Tumors of Aortic Bodies in Dogs: With a Consideration of Morphology of Aortic and Carotid Bodies. F. Bloom.—p. 1.
*Chronic Granuloma Following Intradermal Injection of Typhoid Vaccine. I. L. Tilden and H. L. Arnold Jr.—p. 13.
Pathologic Changes Induced in Various Species by Overdosage with Desoxycorticosterone. H. Selye and C. E. Hall.—p. 19.
Nature of Hyaline Changes in Islands of Langerhans in Diabetes Mellitus. J. B. Arey.—p. 32.
Portal Systemic Collateral Veins in Guinea Pig with Schistosomal Cirrhosis of Liver: Discussion of Congestive Splenomegaly. C. Krakower, W. A. Hoffman and J. H. Axtmayer.—p. 39.
Calcification of Bone Marrow in Toxic Hyperparathyroidism. R. D. Moore.—p. 51.
Genetic Analysis of Induction of Tumors by Methylcholanthrene: V. Absence of Sex Influence When Large Dose of Carcinogen Is Administered. L. C. Strong.—p. 58.
Therapeutic Effects of Disodium Formaldehyde Sulfoxylate Diaminodiphenylsulfone in Experimental Tuberculosis. W. H. Feldman, H. C. Hinshaw and H. E. Moses.—p. 64.

Chronic Granuloma Following Typhoid Vaccine.—Tilden and Arnold observed a peculiar, hitherto undescribed, focal granulomatous reaction to intradermal injections of triple typhoid vaccine in 6 among a total of 4,500 vaccinated persons. The vaccine employed was prepared by the United States Army, using the Boxill strain. No correlation appears between this reaction and previous injections of typhoid vaccine. It is not known whether this reaction vitiates the effect of the vaccination or not. Its chief practical importance appears to lie in the possible cosmetic consequences, should the vaccination be performed in a conspicuous location. The observation is of theoretical importance because it so clearly demonstrates the similarity between the histiocytic response to injections of triple typhoid vaccine and the histiocytic response to virulent typhoid bacilli and because it constitutes another link in the growing chain of evidence that spindle shaped cells in granulation tissue may be histiocytes and not, as is so often and so casually assumed, fibroblasts.

California and Western Medicine, San Francisco

58:313-386 (June) 1943

California Medicine: In Brief Review; Address of the President. W. R. Molony Sr.—p. 319.
Dermatologic Experiences in United States Naval Hospital. F. G. Novy Jr.—p. 323.
Mental Illness Following Pregnancy. K. O. Von Hagen.—p. 324.
Dermatologic Management: Some Functional Concepts. M. T. R. Maynard.—p. 327.
California Physicians' Service: Current Activities. E. V. Askey.—p. 330.
Bone Plates: New Type. K. Townsend and C. Gilfillan.—p. 332.
Surgical Treatment of Intractable Pain. C. H. Shelden.—p. 334.
Origin and Development of Science of Roentgenology. J. D. Camp.—p. 337.
*Diverticulosis and Diverticulitis of Colon. E. J. Kilfoy.—p. 341.

Diverticulosis and Diverticulitis of Colon.—Kilfoy shows that with modern roentgenology the diagnosis of diverticulosis and diverticulitis is common and that these conditions occur in 5 to 15 per cent of the general population after the fourth decade of life. In about 5 to 10 per cent complications develop, and 12 to 20 per cent require surgical intervention. These diverticula do not exist at birth but occur in the fourth, fifth, sixth and seventh decades of life. They are more frequent in males than in females, the ratio being about 2:1. They are produced by many extraneous factors, such as obesity, constipation, flatulence and weakness in the longitudinal muscle fibers of the colon. Most patients can be kept well on a smooth, high caloric diet. To keep the lower bowel evacuated enemas are advisable, or liquid petrolatum or any other soft oily preparation may be given by mouth. The patients must always watch their diet and be educated to watch for complications. If there is severe pain, high leukocyte count, tenderness, rigidity and evidence of perforation or of abscess formation, immediate surgical intervention is indicated. In a large percentage of cases the clinical diagnosis will be either acute appendicitis or ruptured duodenal ulcer. Many methods of surgical attack have been suggested. A single diverticulum can be excised. Resection of the colon or of the area involved may give good results.

Canadian Journal of Public Health, Toronto

34:193-250 (May) 1943

Nutrition Survey in East York Township: Description of Survey and General Statement of Results. Eleanor Riggs, Helen Perry, J. M. Patterson, J. Lerson, W. Mosley and E. W. McHenry.—p. 193.
Bacterial Food Poisoning: Part II. C. E. Dolman.—p. 205.
Effect of Glucose on Penicillin Potency Tests. A. G. Lochhead and M. Timonin.—p. 236.

Canadian Medical Association Journal, Montreal

49:1-76 (July) 1943

*Immersion Blast Injuries of Abdomen. D. R. Webster, A. S. Ross and E. L. Alford.—p. 1.
*Effect of Riboflavin on Corneal Vascularization and Symptoms of Eye Fatigue in Royal Canadian Air Force Personnel. F. F. Tisdall, J. F. McCreary and H. Pearce.—p. 5.
Paget's Disease of Bone: With Report of Case. J. Miller.—p. 13.
Night Vision. D. Y. Solandt and C. H. Best.—p. 17.
Present Views on Etiology and Treatment of Shock: Address in Medicine Before Royal College of Physicians and Surgeons of Canada. J. C. Meakins.—p. 21.
Physiologic Principles in Repair of Inguinal Hernia: Address in Surgery Before Royal College of Physicians and Surgeons of Canada. W. F. Gillespie.—p. 29.
Clinical Points on Ruptured Intervertebral Disks; Low Back Pain and Sciatica. D. McEachern and W. V. Cone.—p. 33.
Treatment of Plantar Warts. J. E. Gendreau and O. Dufresne.—p. 35.
Survey of Series of Hay Fever Cases Treated in 1942. R. F. Hughes.—p. 38.
Anorexia. G. E. Swallow.—p. 43.
Ossiculectomy. H. M. Bowen.—p. 46.

Immersion Blast Injuries of Abdomen.—Webster and his associates observed 15 survivors of a torpedoed ship who sustained abdominal injuries from an exploding depth charge while swimming. They were swimming away from the ship but turned to watch it as it dived and were facing it when the explosion occurred. Each felt that he had been struck a tremendous blow in the abdomen. All suffered severe abdominal pain, crampy in some but mostly a pronounced stabbing pain. All vomited repeatedly, several with blood and bile, and 9 had bloody diarrhea. All had fever averaging 102 F. In 5 distention developed, and almost all had rigidity of the abdominal wall. Four patients died. Four after a protracted convalescence still had mild symptoms five months after the injury. Seven recovered in from three to fourteen days. The tremendous force of the blast is proved by the fact that a cigaret lighter and a wrist watch carried by an officer were completely flattened. He was swimming on his back beside his captain, who was swimming on his abdomen, when the blast occurred. The captain was killed. The officer survived, with the usual symptoms of vomiting, bloody diarrhea and pain, and was able to leave the hospital in two weeks. This seems to argue against the suggestion that the blast enters the rectum. Thoracic symptoms were almost completely absent. Almost all these men had kapok life preservers about their chest, which probably gave protection as well as elevating them to the water's surface. The leukocytosis, the prolonged sedimentation rate, the fever, the loss of weight associated with moderate or severe abdominal pain, tenderness and rigidity, and the absence of physical signs of abscess formation suggest a low grade inflammatory process. It is possible that injury from submucosal hemorrhages permitted pathogenic organisms to infiltrate or pass through the wall of the bowel. The apparent response of two of the patients to sulfathiazole would support this assumption. Submucosal and petechial hemorrhages in the bowel wall could interfere with the neuromuscular mechanism, producing ileus, late sloughing and perforation. The authors recommend that naval personnel be warned of this danger, that life preservers be made of kapok and designed to cover the abdomen and chest, and that physicians in coastal areas appreciate the urgency of early treatment, both medical and surgical.

Effect of Riboflavin on Cornea Vascularization and Eye Fatigue.—Tisdall and his collaborators attempted to demonstrate photographically the changes which occur in the cornea in riboflavin deficiency. Kruse and his co-workers had suggested that the minor degrees of vascularization of the cornea frequently seen in apparently normal human beings were due to a deficiency of riboflavin. They postulated that symptoms of tiredness of the eyes, burning of the eyes, a sandy sensation under the lids and lacrimation might be manifestations of the deficiency and might be cleared by the administration of riboflavin. Riboflavin is rapidly destroyed by light, and it seems possible that a person who is exposed to a great deal of light would have an increased destruction of riboflavin in the eye which would necessitate a greater intake to maintain normal vision and normal health. Men in the Air Forces are exposed to much light. The authors investigated the various degrees of vascularization of the cornea in men who were flying over water and exposed to considerable glare. One hundred and ninety-eight men were examined. There was only 1 man with normal eyes; 17 showed stage 1 involvement, 87 stage 2 and 93 stage 3. A group of men showing stage 3 involvement was chosen to demonstrate the effect of treatment on vascularization of the cornea and the symptoms of fatigue of the eyes. These men were questioned regarding tiredness of the eyes, aching of the eyes, watering of the eyes, sandy sensation under the lids, dizziness, headaches, intolerance of reading and decreased visual acuity. Sixty-seven per cent suffered two or more of these symptoms. The men were divided into three groups. One received capsules containing 3.3 mg. of riboflavin three times daily for a period of two months. The second group received similar capsules three times daily for one month. The third group received capsules which were similar in appearance but which contained no riboflavin. Of the 28 men who received treatment with 9.9 mg. of riboflavin daily for two months, 20 showed either pronounced or moderate improvement, 8 showed either slight or doubtful improvement or no change, and none showed increase in vascularization of the cornea. Of the 21 men who received treatment for a period of one month, 6 showed pronounced or moderate improvement, 14 showed slight or doubtful improvement or no change, and 1 man showed an increase in vascularity. Of the 21 men treated with placebos, none showed either pronounced or moderate improvement, 15 showed slight or doubtful improvement or were unchanged, and 6 were worse. In areas where milk, the best source of riboflavin in the diet, was not available, the prevalence and the severity of corneal vascularization were increased.

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Cancer Research, Baltimore

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Occurrence and Transplantation of Embryonal Nephromas in Rabbit. H. S. N. Greene.—p. 434.
Mammary Cancer in Fostered and Unfostered C3H Breeding Females and Their Hybrids. J. J. Bittner.—p. 441.
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Endocrinology, Springfield, Ill.

32:455-528 (June) 1943

Effects of Large Doses of Androgen on Testis in Ground Squirrel (Citellus Tridecemlineatus). L. J. Wells.—p. 455.
Ability of Adrenal Cortical Hormones Prolactin and Thyroxin to Sustain Weight of Body and Viscera of Hypophysectomized Pigeons. R. A. Miller and O. Riddle.—p. 463.
Pituitary Diabetes in Cat: Recovery Following Phlorhizin Treatment. F. D. W. Lukens, F. C. Dohan and M. W. Wolcott.—p. 475.
Adrenocortical-like Tissue in Ovaries of Adrenalectomized Ground Squirrel (Citellus Tridecemlincatus). R. A. Groat.—p. 488.
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Effect of Differences in Light and Temperature on Size of Combs on White Leghorns. W. F. Lamoreux.—p. 497.
Comparison of Influence of Some Crystalline Hormones of Adrenal Cortex on Deposition of Glycogen in Liver. R. M. Reinecke and E. C. Kendall.—p. 505.
*Determination of Rate of Thyroid Hormone Secretion at Various Environmental Temperatures. E. W. Dempsey and E. B. Astwood.—p. 509.

Secretion of Thyroid Hormone at Various Temperatures.—From data presented by Dempsey and Astwood it may be concluded that the rate of secretion of the thyroid hormone is increased by exposure to cold and reduced by exposure to heat. The maintenance or restoration of normal thyroid weight by the administration of thyroxin to rats simultaneously treated with the antithyroid drug thiouracil has been used as the basis of a procedure for the assay of thyroid hormone. The rate of thyroid enlargement in response to thiouracil was low in hot environments and high when rats were maintained in the cold. A quantity of thyroid hormone equivalent to 5.2 micrograms of thyroxin daily was required to maintain a thyroid of normal weight in young male rats kept at room temperatures averaging 25 C. At 1 C. the thyroxin requirement was increased to 9.5 micrograms, while at 35 C. it was decreased to 1.7 micrograms. These values are considered to be quantitatively equivalent to the amount of hormone produced by the normal thyroid gland under these conditions.

Journal of Aviation Medicine, St. Paul

14:97-156 (June) 1943

*Hyperventilation Syndrome and Its Importance in Aviation. H. C. Hinshaw, R. F. Rushmer and W. M. Boothby.—p. 100.
*Decompression Disease of Bone. J. H. Allan.—p. 105.
Medical Service of Service and Depot Groups, Army Air Forces. J. Hargreaves.—p. 112.
Extent of Water Loss by Rats at Lowered Barometric Pressure. H. G. Swann and W. D. Collings.—p. 114.
Some Physiologic Aspects of Parachute Descent from High Altitudes. K. E. Penrod.—p. 119.
Problem of Airsickness. P. A. Campbell.—p. 126.
Labyrinth in Aviation. H. Brunner.—p. 132.

Hyperventilation Syndrome in Aviation.—Hinshaw and his collaborators describe the symptoms produced by voluntary deep and rapid breathing, which are characterized by dizziness, blurring of vision, numbness of the extremities and in later stages by muscular cramps, serious vasomotor collapse and unconsciousness. These symptoms are produced by acapnia and may result from spontaneous, unrecognized hyperventilation occurring under conditions of emotional strain, excitement and anxiety. The symptoms of extreme hyperventilation are well known but it has not been adequately emphasized that similar ones are produced by mild hyperventilation continued over a longer period. Such symptoms would interfere seriously with a pilot's ability to control an airplane. A few instances of probable spontaneous hyperventilation among fliers have been described. The authors noted a clear variation in results produced among different aviators tested by voluntary hyperventilation. The severity of symptoms was not related to the degree of acapnia produced. They propose that the demonstration of voluntary hyperventilation be included as a part of the routine periodic medical examination of commercial and military pilots, so that these fliers may be trained to recognize the symptoms produced and to control them by voluntary suppression of respiration, should they occur during flight. If this plan should be carried out on a sufficiently large scale it would be possible to determine how frequently spontaneous hyperventilation occurs during flight and to estimate its importance as a factor in the production of "pilot error."

Decompression Disease of Bone.—Allan points out that during ascent in an airplane the tissues become supersaturated with nitrogen because the partial pressure of nitrogen in the lungs falls off. As this pressure is released the nitrogen comes out of solution in the body and appears in the tissues and in the blood in the form of bubbles. Since the elimination of nitrogen from the body is entirely through the blood stream, those parts of the body which have the poorest blood supply will be the slowest to lose their excess nitrogen. Bone is the tissue with the poorest blood supply in relation to the nitrogen content. There are two areas in bone where anastomotic connections are limited, namely the epiphysial area and the metaphysial area close to the epiphysial line. In these two areas the reaction to complete or incomplete interruption of the blood supply is the same as in any area with limited anastomotic connections, and the process is known as aseptic necrosis. In these two areas are found the lesions so characteristic of decompression disease of bone. The favored seats for these lesions are the long bones, the shoulder joint and the hip joint. The late effects of this process are recognizable roentgenographically. They are (1) aseptic necrosis of the hips and the shoulders, (2) medullary calcification in the diaphysial ends of the long bones and (3) hypertrophic arthritis. Not all of these need be present to justify the diagnosis. Aseptic necrosis with osteoarthritis may occur without medullary calcification. Joint changes are more frequently present than changes in the long bones. The recognition of such bone changes is of paramount interest in time of war, as the incidence of symptoms due to decompression illness associated with high altitude bombing and fighting are on the increase.

Journal of Nervous and Mental Disease, New York

97:623-740 (June) 1943

Psychologic Observations in Affective Psychoses Treated with Combined Convulsive Shock and Psychotherapy. N. A. Levy and R. R. Grinker.—p. 623.
Neurologic and Endocrine Aspects of Atrophic Arthritis (Deformans): Report on Use of Vitamin E and Artificial Fever. S. Stone.—p. 638.
Paralysis in Old Testament: Some Neurologic Observations Recorded in Bible by Ancient Hebrew Prophets. C. J. Brim.—p. 656.
Intracranial Aneurysms: Report of 3 Cases. M. H. Weinberg.—p. 666.
Environmental and Personality Factors in Psychoses. Irene Case Sherman and S. H. Kraines.—p. 676.

98:1-114 (July) 1943

Introduction to Growth Concept of Nervous Integration: (Application to Psychiatric Disease: Schizophrenia and to Somatic Disease; Renal Hypertension). D. E. Schneider.—p. 1.
*Present Status of Convulsive Shock Therapy. A. E. Bennett.—p. 23.
Hemiatrophy of Brain with Contralateral Cerebellar Atrophy: Case Presentation with Histopathologic Findings. J. Moore.—p. 31.
Pubertas Precox in Female Infant Caused by Ventricular Cyst: Report of Case. D. J. Flicker.—p. 42.
Cataplexy and Its Treatment. J. B. Dynes.—p. 48.
Observations in Electric Shock Therapy Applied to Problems of Epilepsy. L. B. Kalinowsky and F. Kennedy.—p. 56.

Present Status of Convulsive Shock Therapy.—Bennett shows that convulsive shock therapy is of doubtful value in modifying the schizophrenic personality. In cases with affective predominance it is effective, but otherwise it is not advisable in schizophrenia. The induction of grand mal seizures by whatever method is effective in a large percentage of affective disorders. Traumatic skeletal and visceral complications are extremely serious in any form of straight convulsive shock, whether induced by a drug or electrically. Preliminary curarization is a safe preventive of traumatic complications in any type of convulsive shock. It increases the scope of usefulness of convulsive therapy and lessens the contraindications and thus improves the therapeutic results.

Journal of Urology, Baltimore

49:755-894 (June) 1943

*Pheochromocytoma of Adrenal Gland. A. Hyman and W. H. Mencher. —p. 755.
Presacral Sympathicoblastoma in Infant Causing Urinary Obstruction. A. B. Hepler.—p. 777.
Laminography in Visualization of Suprarenal Glands. S. F. Wilhelm. —p. 785.
Anatomic Relations of Ectopic Iliolumbar Kidneys; Bilateral in Adult, Unilateral in Fetus. E. H. Daseler and B. J. Anson.—p. 789.
Upper Urinary Tract in Cases of Neurogenic Bladder: Preliminary Communication. E. Smith and A. Strasberg.—p. 803.
Cystitis Emphysematosa: Case Report. R. A. Burns.—p. 808.
Transurethral Resection with Cold Punch: Operative Technic. J. L. Emmett.—p. 813.
*Transurethral Prostatic Resection: Ultimate Results. L. M. Orr, P. R. Kundert and F. J. Pyle.—p. 840.
Medical Findings in Benign Prostatic Hyperplasia: New Method of Grouping Cases for Operation. C. H. DeT. Shivers.—p. 847.
Sedimentation Rate in Cases of Benign Hypertrophy and Carcinoma of Prostate Gland and Carcinoma of Prostate Gland with Metastasis. J. H. Tillisch and H. C. Habein.—p. 857.
Ratio of Urinary Androgen and Estrogen in Relation to Benign Hypertrophy of Prostate. Mary L. Miller and R. A. Moore.—p. 861.
Unusually Long Foreign Body Impacted in Urethra, Causing Painful Priapism for Seven Days: Removal and Cure by External Urethrotomy. R. Gutierrez.—p. 865.
Male Climacteric: Additional Observations of 37 Patients. A. A. Werner.—p. 872.
Henry Jacob Bigelow and His Operation—A Major Contribution to Modern Urology Comes Finally into Its Own. R. P. Middleton. —p. 883.

Pheochromocytoma of Adrenal Gland.—Tumors of the medullary portion of the adrenal gland, according to Hyman and Mencher, may be divided clinically into those which produce hormonal symptoms and those which do not. Tumors of the pheochromic cell (pheochromocytoma) represent the type producing the hormonal symptom complex; sympathoblastomas, neuroblastomas, and ganglioneuromas arising from the ganglionic cells represent the nonhormonal type of tumor. The pheochromocyte represents the mature stage of the endocrine differentiation of the formative cells. An abnormal proliferation of these mature cells leads to the development of hormonal medullary tumors variously known as chromaffinomas, paragangliomas or pheochromocytomas. These occur not only in the medulla of the adrenal gland but wherever chromaffin tissue is present. They may thus be intra-adrenal or extra-adrenal in location. They are usually benign and well encapsulated. In a typical history the patient begins to complain of a pounding headache, nausea, dyspnea, orthopnea, palpitation, blanching of peripheral portions of the body, paresthesias, abdominal cramps, vomiting, precordial throbbing and extreme weakness. The attacks vary in length from minutes to hours, during which time the patient may be in a state of shock. The attacks usually terminate with flushing of the blanched areas, profuse perspiration and weakness. Death during an attack may occur from shock, pulmonary edema, failure of the left side of the heart, coronary disease or cerebral manifestations. The attacks may occur spontaneously or they may be induced by any mechanism which calls forth a discharge of epinephrine (pressor response). The causative factors include emotional upset, fear, anger, slight trauma, change in posture from the reclining to the upright position, physical exertion, hyperventilation, lying on the side of the tumor, massage of the abdomen on the side of the tumor, administration of histamine or of epinephrine or immersion of the extremities in cold water. The diagnosis of pheochromocytoma is based on (*a*) the typical symptom complex during an attack (spontaneous or induced), (*b*) the typical mechanisms of a pressor response, (*c*) the demonstration of a pressor substance in the blood of a patient during the height of an attack, (*d*) the demonstration of the tumor by perirenal insufflation. Four cases of pheochromocytoma of the adrenal gland are presented. Three of the patients were women and the fourth was a male. All the tumors were removed successfully and all the patients made an uneventful recovery. A long period of follow-up reveals that the patients are in excellent health and that no further attacks have occurred.

Ultimate Results of Transurethral Prostatic Resection.—Orr and his co-workers made a follow-up study of 483 cases of transurethral resection of the prostate. Of these 407 were traced. One hundred and fifteen patients died within a few months to nine years or more after leaving the hospital. Intelligible replies were received from 252, and of this number 209 presented themselves for examination. The information obtained did not substantiate the extremely low mortality rate reported by other workers with the method. Patients who stated that they were completely relieved and in whom a complete resection had been performed had no evidence of regrowth on cystoscopic examination several years after operation. Complete resection implies the removal of all obstructing tissue down to the fibers of the prostatic capsule in all directions in all quadrants of the vesical outlet. Patients who returned with obstructive symptoms years after the original operation were invariably found to have hypertrophy in that part of the prostate which was not interfered with at the original operation. Patients who were never completely relieved and who returned a few months to a year later were usually those from whom not enough prostatic tissue had been removed. Persistent pyuria resulting in frequency, burning and nocturia has been a discouraging complaint in a large majority of cases. Pathologic as well as bacteriologic study of the tissue removed indicates that pyuria is far more often due to the leaving behind of infected bits of prostatic tissue than to the introduction of infection during or immediately after the operation. The pathologist is at a disadvantage in making a diagnosis of the tissue removed by resection unless practically every section is examined. In many cases incipient carcinoma is undoubtedly overlooked, as evidenced by the number of patients returning with unmistakable signs of a cancerous process in later years. Many of these patients would have stood a much better chance of cure had they undergone total prostatectomy. The most important conclusion to be gained from this study is that a great many more patients with severe organic diseases were given the opportunity for relief of their urinary obstruction by the use of transurethral resection where other methods of removal may have been considered too hazardous. It is in this narrow field of borderline patients that prostatic resection offers an advantage over other methods of prostatectomy.

Kentucky Medical Journal, Bowling Green

41:185-216 (June) 1943

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Procurement and Assignment Service. E. L. Henderson.—p. 224.
Vitamin B Complex. C. W. Dowden Jr.—p. 225.
Vitamin B Complex Used in Neuropsychiatry. E. E. Landis.—p. 229.
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Sulfonamides in Military Medicine. W. H. Matuska.—p. 234.
Disability Following Back Injury. C. B. Stacy.—p. 240.
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Maine Medical Association Journal, Portland

34:103-128 (June) 1943

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34:129-146 (July) 1943

Hospital Care as Department of Health and Welfare Problem. H. R. Kobes.—p. 131.

Medical Annals of District of Columbia, Washington

12:213-248 (June) 1943

Doctor's Evaluation of Patients' Attitudes. J. C. Whitehorn.—p. 213.
Medical Aspects of Chemical Warfare: II. Vesicants and Their First Aid Treatment. D. H. Stubbs.—p. 220.
*Problem of Varicose Ulcers of Leg. W. R. Manning.—p. 223.
Advantages of Teaching Syphilitic Clinic in Hospital Polyclinic. G. W. Cresswell and W. L. Murray.—p. 227.
Multiple Spondylolisthesis: Report of Case. M. C. Cobey, H. C. Hansen and M. H. Morris.—p. 231.

Varicose Ulcers of Leg.—Manning stresses the need for more standardized methods of treatment of varicose ulceration. High saphenous ligation, with multiple ligations when indicated, accompanied by retrograde injection is the best method of obliteration. Periodic injections of isolated varices may easily be done during the follow-up treatment. Stimulation of granulation tissue should be undertaken following stoppage of the

reversed flow of blood. Removal of the stagnant tissue fluids about the ulcer can be accomplished by the use of an elastic supportive bandage. A most important point is that the patient should use the leg while the bandage is in place to obtain a better result. Skin grafting will occasionally greatly shorten the period of healing. Recurrences will be prevented in some cases by prolonged support.

Military Surgeon, Washington, D. C.

93:1-116 (July) 1943

Problems of Medical Activities with Expeditionary Forces. L. W. Johnson.—p. 1.
Tropical Evacuation Hospital. M. C. Berry.—p. 14.
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Military Malingerer. J. A. Brussel and K. S. Hitch.—p. 33.
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Kenny Method for Treatment of Poliomyelitis. C. J. Frankel.—p. 60.
Sulfonamide Readministration with Unusual Reactions: Case Report. R. C. Green and M. L. Steckel.—p. 63.
Diagnosis of Acute Abdominal Pain in Military Service. R. W. Postlethwait.—p. 66.
Treatment of War Wounds with Sulfonamides (New Medicated Gauze for Packing Purposes). R. de R. Barondes and F. G. Driscbel.—p. 72.
Waterhouse-Friderichsen Syndrome: Report of Case in Soldier. J. W. Leichliter and C. E. Fish.—p. 77.
Multiple Metatarsal Fractures: Method of Fixation. M. M. Marrin.—p. 81.
Instrument for Holding Nasal Catheter. H. J. Walder.—p. 83.
Poisonous Snakes of Southern California. J. A. Magee.—p. 85.

Nebraska State Medical Journal, Lincoln

28:165-196 (June) 1943

Hypertensive Encephalopathy. E. B. Reed.—p. 171.
National Headquarters Selective Service System, Medical Circular No. 3: Preliminary Physical Examination as of March 1, 1943. —p. 181.

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Pennsylvania Medical Journal, Harrisburg

46:881-1008 (June) 1943

Accomplishments and Aims of Medical Society of State of Pennsylvania in Industrial Health. C. F. Long.—p. 895.
Acute Tracheoesophageal Fistula. C. J. Stoecklein and W. S. Nettrour. —p. 898.
Comparative Value of Roentgen Versus Clinical Methods of Pelvic Examination in Obstetrics: Part I. Roentgenologic Aspects. S. G. Henderson.—p. 902.
Id.: Part II. Clinical Aspects. H. A. Power.—p. 907.
Chronic Prostatitis in Man Past Fifty. W. I. Bachert.—p. 910.
Sarcoma of Prostate. R. P. Beatty.—p. 915.
Management of Patient with Prostatic Hypertrophy. J. C. Birdsall. —p. 919.
Importance of Proper Nourishment of Workers in Heavy Industries. J. J. Toland Jr. and I. H. Kornbloch.—p. 927.
Carcinoma of Stomach: Plea for Early Diagnosis and Surgical Treatment. M. R. Hoon.—p. 929.
Tongue in Nutritional Disorders. L. A. Greer and F. B. Utley. —p. 933.
Practical Aspects of Thiamine Therapy as Determined by Experimental Study of Its Utilization. K. O. Elsom and T. G. Miller.—p. 940.
Cancer of Breast. E. P. Buchanan.—p. 944.
Subarachnoid Hemorrhage. W. J. Fetter.—p. 949.
Osteomyelitis of Tibia with Thrombosis of Saphenous Vein: Discussion of Conservative Therapy. A. O. Wilensky.—p. 953.
*Appraise Vitamin Formulas and Not Titles. H. T. Kelly.—p. 961.

Appraise Vitamin Formulas and Not Titles.—To evaluate a vitamin combination it is necessary to know the amount of the vitamins it contains. For this reason their biologic activity should be expressed in terms of a common system and where possible the weights, in milligrams, of the vitamins should be given. The vitamins should be present in the ratio of the adult minimum daily requirement to permit adequate dosage of any component without waste of others. Five times the daily recommended allowances or maintenance levels should be prescribed for therapeutic doses. It is also necessary to bear in mind the cost of the product on the basis of the daily cost of supplying the therapeutic requirements of the individual.

Southern Medical Journal, Birmingham, Ala.

36:467-542 (July) 1943

Cancer of Rectum: Preoperative and Postoperative Complications. J. L. Jelks.—p. 467.
Malignant Predominantly Cystic (Unilocular) Cerebral Tumor (Meningioma) with Alveolar and Reticulin Forming Cells. C. R. Tuthill and J. M. Meredith.—p. 471.
*Prefrontal Lobotomy: Six Years' Experience. J. W. Watts and W. Freeman.—p. 478.
Evaluation of Some Early Otogenic Complications. B. Wordsen. —p. 486.
Roentgen Ray Therapy of Paranasal Sinuses. F. Hames.—p. 489.
Radiation and Surgery in Management of Ovarian Carcinoma. D. Y. Keith.—p. 490.
Immunization in Pediatrics: Past and Present. C. J. Bloom.—p. 495.
School Medical Program for Duration. W. R. Willard.—p. 503.
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Rupture of Uterus: Report of 2 Cases with Recovery. W. T. Black Jr.—p. 510.
Traumatic Lesions of Abdomen. C. Williams.—p. 516.
Military Gastroenterology: First Year. D. T. Chamberlin.—p. 523.
Functional Gastrointestinal Conditions. J. S. Skobba.—p. 528.
Orthopedic Problems at Naval Air Station. E. L. Jewett and H. Penn—p. 533.
Complications in a Diabetic: Nodular Thyroid and Branchial Cleft Fistulae. H. J. Warthen and W. R. Jordan.—p. 536.

Prefrontal Lobotomy.—Watts and Freeman have performed lobotomies on 136 patients during the last six years. Unless sufficient white matter is cut, worry, nervous tensions, apprehension and obsessive thinking are not permanently relieved. The operation must be done symmetrically on both sides. Anatomic studies of patients who have died some time after the operation showed that integrity of the cortical architecture in the frontal lobe is preserved but that degeneration takes place in the nucleus medialis dorsalis of the thalamus. The authors believe that this bundle is of importance in linking ideational with affective experience and that interruption of this pathway is the greatest factor in producing alteration in emotional responses of the patient. Having observed repeatedly that a satisfactory therapeutic result occurs when lobotomy produces drowsiness, impairment of memory and disorientation, they now use these as a yardstick to determine the depth and the extent of the incisions. Whenever possible the patient is operated on under local anesthesia. The neurologist converses with the patient and puts him through various intellectual exercises. Apprehension and anxiety may decrease or disappear after two or three quadrants have been cut, but this is not enough. Unresponsiveness or disorientation is usually necessary in order to obtain a satisfactory clinical result. Disappearance of nervous tension, impairment of memory, confusion and disorientation usually come on within a few seconds to a few minutes after the fourth quadrant is sectioned. There is little shock associated with the operation. When prefrontal lobotomy fails to relieve the mental symptoms, or when the remission of symptoms is only temporary, a second or even a third operation is performed. This has been done on 23 of the authors' patients. Twenty-seven of the patients subjected to prefrontal lobotomy are regularly employed, 16 are employed part time or studying, and 39 are keeping house. Therefore 82 are leading useful lives. Thirty more are living at home but are not taking an active part in the activities there. The best results occur in the obsessive tension states and the involutional depressions. Definite conclusions cannot be drawn about the schizophrenias until more time has elapsed and a larger series is accumulated, but the results have been satisfactory enough to encourage use of the procedure in selected cases.

Southwestern Medicine, Phoenix, Ariz.

27:139-162 (June) 1943

Rheumatic Heart Disease in Arizona. A. N. Shoun.—p. 140.
*Relief of Allergic Premenstrual Headache: Preliminary Report. E. W. Phillips.—p. 144.
Fractures of External Malleolus. H. A. Barnes.—p. 147.

Relief of Allergic Premenstrual Headache.—Phillips points out that premenstrual headache may be accompanied by nausea, vomiting, vertigo and visual disturbances and less frequently by pruritus or urticaria. Premenstrual tension, a condition of more or less irritability, emotionalism, sleeplessness

and temperamental change, may occur without a headache, but it also may precede the headache. Malaise, discomfort and eruptions on the face are not unusual. These manifestations vary widely in degree and duration. With the increasing employment of women in essential industries this recurring impairment of efficiency or absence from work presents a considerable industrial problem. The author found that certain allergic women who suffer from premenstrual headache, premenstrual tension and associated dysfunctional ailments were found to have sharply positive reactions to intradermal testing with a gonadotropic preparation, a 1:5 dilution of synapoidin (a combination of chorionic gonadotropin and pituitary extract). Numerous controls had a negative response. Women showing positive reactions were relieved by intradermal desensitization with the same preparation. This test and treatment are simple, harmless and effective. It is recommended for trial by gynecologists and industrial physicians.

Tennessee State Medical Assn. Journal, Nashville

36:205-246 (June) 1943

Diseases of Mediterranean Basin. E. L. Turner.—p. 205.
Medical Practice in Wartime. W. C. Chaney.—p. 210.
Cancer of Prostate. B. W. Wright.—p. 223.

36:247-288 (July) 1943

Postwar Coresponsibilities of Health Professions. R. L. Swain.—p. 247.
Your Stake in Capitalism. E. Johnston.—p. 254.
Management of Placenta Previa. M. S. Lewis.—p. 258.

United States Naval Med. Bulletin, Washington, D. C.

41:917-1212 (July) 1943. **Partial Index**

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Preliminary Report on Malaria in Combat Zone. J. F. Barber.—p. 977.
*Primary Atypical Pneumonia: Analysis of Therapeutic Results in 155 Cases. H. L. Correll and I. I. Cowan.—p. 980.
*Primary Atypical Pneumonia, Etiology Unknown. W. L. Haight and J. H. Trolinger.—p. 988.
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Epidemiology of Streptococcus Hemolyticus Infections at Naval Training Stations. I. A. F. Coburn.—p. 1012.
Rheumatic Fever in Navy. A. M. Master.—p. 1019.
New Developments in Treatment of Prostatic Carcinoma. M. S. Curtis.—p. 1022.
Comparative Study of Chest X-Ray Survey Methods. A. B. Robins.—p. 1036.
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Clinical Study of Results of Exposure of Laboratory Personnel to Radar and High Frequency Radio. L. E. Daily.—p. 1052.
Studies on Improvement of Wound Therapy by Use of Synergistic Mixtures of Antibacterial Substances. L. A. McClintock and R. H. Goodale.—p. 1057.
Fungi Go to War. A. P. R. James.—p. 1065.
Errors in Isoagglutination Tests. B. C. Shackford.—p. 1068.
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Neuropsychiatric Clinic at Naval Construction Training Center. S. M. Dillenberg and B. Locke.—p. 1076.
*Local Use of Microcrystalline Sulfathiazole in Treatment of Female Gonorrhea and as Prophylaxis for Gonorrhea. H. E. Stedman.—p. 1118.

Results in 155 Cases of Primary Atypical Pneumonia.—Correll and Cowan report clinical observations in 155 unselected clinically similar cases of atypical pneumonia, which may be classified as primary atypical pneumonia, etiologic agent unknown. The principal clinical symptoms were rapid onset with chilliness, intermittent or remittent fever lasting six to eight days, sore throat, nonproductive cough becoming productive in four to seven days, and headache. The physical findings frequently developed late, and the paucity of such findings as compared with the extensive x-ray findings was striking. Resolution as demonstrated by x-ray studies usually took about twenty days. The infrequence of complications and sequelae, the frequency of migration and delayed resolution and the failure to respond to sulfonamides were the other characteristics of importance. Not infrequently a febrile period of one to two days, with a temperature of 100 F., and a few findings in the chest may prove on examination to be extensive pneumonia requiring twenty or more days for resolution. The proper x-ray technic is important in order to avoid overlooking this type of pneumonia. The x-ray films must be made with a so-called light technic; that is, the dorsal vertebrae should not be visible through the cardiac shadow. In 1 of 23 patients given x-ray therapy within four days after admission there was a failure to respond to treatment. In the remainder the febrile period, the total number of days of illness and the days for resolution as proved by x-ray examination were reduced one half. Of 9 patients whose pneumonia failed to resolve within thirty days on routine or other treatments, as evidenced by x-ray studies, 7 showed x-ray clearing within an average of 4.0 days after one or two treatments of 112 roentgens each. Twenty-two and three-tenths per cent failed to be benefited by x-ray treatment. Roentgen therapy in this series showed definite promise in shortening the period of sickness in cases of acute development; it appears to be of definite value in shortening the period of delayed resolution and may be of aid in decreasing the incidence of complications. Its further trial in similar cases is suggested.

Primary Atypical Pneumonia.—Haight and Trolinger present their observations in 47 cases. Although the disease does not seem to be highly communicable, its incidence may be much higher than is generally appreciated in view of its as yet limited recognition. The authors have found the following aspects of greatest value in diagnosis: (1) a benign clinical appearance, (2) a gradual onset with chilly sensations, headache and malaise, (3) relative bradycardia—pulse rate out of proportion to fever, (4) suppressed breath sounds as the most reliable and localizing of the usually deceptive pulmonary signs, (5) an essentially normal hemogram and normal flora in the sputum and (6) an x-ray film of the chest as the final court of appeal, without which few cases can be definitely diagnosed. There were no complications (pleural effusion, empyema, secondary invaders, abscess, pleuritis or bronchiectasis) in this series. As the disease is apparently unaffected by the sulfonamides, treatment is symptomatic and supportive.

Local Use of Sulfathiazole in Treatment and Prophylaxis of Gonorrhea.—Stedman employed the microcrystalline preparations of sulfathiazole because of the ease of application, the property of remaining in a milklike suspension and the absence of a tendency to clump and cake. He tried this therapy in a group of native women who were the source of gonorrheal infection in the military forces. Of 60 women who had been treated during the last three years, 17 were found to be infected. These were immediately started on local therapy consisting of daily douches of 5 per cent saponated solution of cresol followed by swabbing of the cervix and vagina with acriflavine 1:2,000. Five did not respond after three or four weeks of this form of therapy. These 5 who still had smears positive for the gonococcus and all others subsequently encountered provided the clinical material for a trial of local sulfathiazole therapy. The method of treatment was as follows: 1. Treatments were given once daily. The mucopurulent exudate was removed from the cervix and vagina with a dry sponge. 2. Three methods of application of microcrystalline sulfathiazole were used: (*a*) By means of a powder blower the cervix and vagina were coated with microcrystalline sulfathiazole, (*b*) 2 or 3 cc. of a 5 per cent solution of microcrystalline sulfathiazole was instilled into the vagina or (*c*) a suppository of 10 per cent microcrystalline sulfathiazole was inserted into the vagina. This suppository takes about ten minutes to dissolve, spreads out over the entire cervix and vagina and remains for several hours. The glycerin suppository was found to be the best form of application. 3. About 5 cc. of a 5 per cent suspension of microcrystalline sulfathiazole was instilled into the urethra. This plan of treatment resulted in negative smears in from eight to thirty-one days. Local sulfathiazole therapy caused the patients no inconvenience except the daily attendance at the "clinic." There was no evidence of irritation or inflammatory reaction due to the local use of the drug. Prophylaxis by urethral instillation of a 5 per cent suspension of microcrystalline sulfathiazole was effective in all but 2 (99 per cent) of 297 males. The use of vaginal suppositories of microcrystalline sulfathiazole is suggested as prophylaxis against gonorrhea in order to protect both parties of the sexual union.

War Medicine, Chicago

4:1-128 (July) 1943

Air Borne Infections: A Review; the Personnel of Naval Laboratory Research Unit No. 1. A. P. Krueger, officer in charge.—p. 1.
Rapid Identification of Enteric Pathogenic Bacteria. M. L. Littman. —p. 31.
Localized Tetanus: Use of Oscillograph Electrocardiograph for Recording of Normal and of Abnormal Action Currents of Skeletal Muscle (Electromyograms). L. Gunther and J. E. Walker.—p. 57.
Head Injury: Review of Literature. H. H. Merritt.—p. 61.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

51:225-256 (June) 1943

Clinical Effects of Oral Anhydrohydroxyprogesterone on Motility of Human Gravid Uterus. E. W. Page and L. Woods.—p. 225.
Problem of Nutrition in Patients with Gastric Lesions Requiring Surgery. J. E. Rhoads, C. Riegel, C. E. Koop and I. S. Ravdin.—p. 229.
*Chronic Mastitis and Carcinoma. D. McKinley.—p. 234.
Substitution Operation for Opponens Paralysis of Thumb: Modification of Royle Technic. L. S. Lucas and H. E. Davis.—p. 240.
*Simple Amenorrhea or Pregnancy? Use of Prostigmine in Differentiation and Treatment. H. S. Douglas.—p. 243.

Chronic Mastitis and Carcinoma.—McKinley discusses the relationship of chronic cystic mastitis to carcinoma of the breast. He presents a summary of the pathologic pictures that come under the heading of chronic cystic mastitis as described and interpreted by Cheatle and Cutler. The first is mazoplasia, the manifestation in the breast of excessive secretion of corpus lutcum. The second form is cystiferous dequamative epithelial hyperplasia. Malignant neoplasia of the breast arises chiefly from the sessile papillomas. McKinley reviews 60 cases of chronic cystic mastitis seen in the University of Oregon Medical School and also the records of the cases of breast carcinoma of the tumor clinic. He found that 23 per cent of 128 pathologic reports of breast carcinoma contain an associated diagnosis of cystiferous desquamative epithelial hyperplasia or imply such a diagnosis. He thinks that this percentage is inaccurate and too conservative. In 4 per cent of the reports the carcinoma originated in papillomas of cystiferous desquamative epithelial hyperplasia. The analysis of the cases of cystiferous desquamative epithelial hyperplasia or chronic cystic mastitis has not resulted in a satisfactory appraisal of the incidence of subsequent carcinoma. Reasons for the inability to draw conclusions are that (*a*) too small a series has been accumulated, (*b*) many of those on whom the diagnosis is made clinically have not had pathologic confirmation and (*c*) follow-up has been too infrequent and too short. The author thinks that with regard to the management of an individual case of chronic cystic mastitis the attitude of Shields Warren seems the most logical. Chronic cystic mastitis predisposes to cancer. It is impossible to tell clinically in which case cancer will or will not develop. The risk is probably not sufficiently great to warrant bilateral mastectomy in all cases. Certainly all localized masses in the breast should be excised and examined, but local excision will be followed by further symptoms in about 15 per cent and will not insure against carcinoma either microscopic at the time of surgery or in the future. Endocrine therapy (or pregnancy) may be permissible in those under 30.

Prostigmine Pregnancy Test.—Douglas directs attention to the prostigmine pregnancy test first announced three years ago by Soskin, Wachtel and Hechter. He reviews 62 cases of menstrual delay in which he resorted to the intramuscular injection of prostigmine methylsulfate and concludes that this procedure is a reliable test for pregnancy and that it yielded results comparable to the Friedman test. In all instances in which the Friedman test was used to corroborate the prostigmine test the two were found in perfect accord. In borderline endocrine cases the interpretation of the prostigmine test must be as carefully guarded as in certain positive Friedman tests. In 2 instances in which this test was used in cases of dyscrinism, prostigmine failed to bring on the menstrual flow as might be expected. The clinician must not include such cases for a prostigmine trial without properly evaluating the glandular factors involved. The advantage of prostigmine as a test for pregnancy over that of other pregnancy tests is especially noted in that in the absence of pregnancy or a glandular dysfunction it will bring about vaginal bleeding, thereby acting as a therapeutic as well as a testing agent and affording quick psychologic and physiologic relief. The test is simple, the results are accurate and it can be applied by the clinician in his office.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease of Childhood, London

18:65-112 (June) 1943

Studies in Anemias of Infancy and Early Childhood: Part XIII. Experiments on Blood Regeneration and Their Significance for Life Span of Erythrocytes. H. S. Baar.—p. 65.
Rheumatic Infection in Childhood. E. C. R. Couper.—p. 88.
Plasma Protein Values in Infants. Evelyn M. Hickmans, Ethel Finch and Eva Tonks.—p. 96.

British Journal of Radiology, London

16:187-220 (July) 1943

Treatment of Carcinoma of Prostate. E. W. Riches, I. G. Williams and A. Haddow.—p. 187.
Etiology of Erythema Nodosum. P. Kerley.—p. 199.
Calculation of Dosage Rates from Directional Caliper Measurements. F. Bush.—p. 205.
Osteochondral Hypothyroidism: Two Cases. R. Hermon.—p. 208.
Carcinoma of Thoracic Esophagus: Some Notes on Its Pathology and Spread in Relation to Treatment. J. A. C. Fleming.—p. 212.
Some Problems in Connection with Early X-Ray Changes in Adult Pulmonary Tuberculosis. G. Simon.—p. 217.
Dilatation of Esophagus. E. R. Williams.—p. 220.

British Medical Journal, London

1:747-776 (June 19) 1943

Principles of Exercise Therapy. E. A. Nicoll.—p. 747.
*Jaundice Following Administration of Human Blood Products. H. V. Morgan and D. A. J. Williamson.—p. 750.
New and Simple Method for Subcutaneous Ligature of Varicose Veins. R. W. Goldstone.—p. 753.
Postoperative Respiratory Complications in Service Cases. H. M. Bird, S. D. Kilner and D. J. Martin.—p. 754.
Caustic Soda Burns: Their Prevention and Treatment. H. Terry.—p. 756.

1:777-808 (June 26) 1943

Immunity to Tuberculosis. G. G. Kayne.—p. 777.
Mild Depressive Psychosis. B. Andrateschke and C. H. Rogerson.—p. 780.
Abnormal Agglutination Reactions of Strain of Leptospira Icterohemorrhagiae. J. C. Broom and H. C. Brown.—p. 783.
Symptomatology of Malaria. P. H. Birks.—p. 784.
Gas Infection of Brain as One Form of Serious Complications of Cerebrocranial Injuries. Report by a Committee of Soviet Scientists. —p. 785.

2:1-30 (July 3) 1943

Circulation in Arterial Hypertension. G. W. Pickering.—p. 1.
Differential Diagnosis of Spinal Arthritis in Young Subjects. C. W. Buckley.—p. 4.
Study of Accuracy of Serum Protein Estimations and of Diurnal Variations in Their Level. M. Dyson and G. Plaut.—p. 6.
Control of Menopausal Flushes by Vitamin E. A. M. Hain and J. C. B. Sym.—p. 8.
Hemiplegia Complicating Whooping Cough. L. J. Grant and C. E. Williams.—p. 9.

Jaundice Following Administration of Human Blood Products.—Morgan and Williamson describe a small series of cases of jaundice which followed the intravenous administration of plasma or reconstituted dried human plasma. The observation of jaundice in 2 patients who had received serum intravenously several weeks previously led to an investigation of all known to have been transfused with serum or plasma in the past year. Of 56 patients, 50 have been traced and 9 (18 per cent) of them have since developed jaundice. Six were under direct observation at the time of jaundice, but 3 were questioned retrospectively. The author gives brief histories of these 9 patients. There were no cases of jaundice among the medical and nursing staffs of the wards concerned. None of the patients who returned to their homes before developing hepatitis were aware of contact with any case of jaundice. The onset of symptoms, which was sudden, occurred forty-nine to one hundred and seven days after the last transfusion. Malaise, nausea and epigastric discomfort, which sometimes persisted for some weeks, accompanied the jaundice in 7 cases and preceded its onset by a few days in 3. In all but 1 of the cases the liver was enlarged and tender; but in only 1 was the spleen palpable. There was a positive direct van den Bergh reaction in 5 cases and pale stools in 7. The duration of the illness varied from three to twelve weeks. The clinical picture most closely resembles that of infective hepatitis. It seems unlikely that this is an outbreak of infective hepatitis.

The only common causal factor was the administration of serum or plasma. It therefore seems probable that these fluids are of etiologic significance and that this outbreak is similar to those occurring after yellow fever and measles inoculation. The association of such cases of jaundice with transfusion may easily be overlooked in view of the long symptomless period which intervenes.

Edinburgh Medical Journal

50:321-384 (June) 1943

Celiac Disease with Ariboflavinosis. R. B. M'Millan.—p. 321.
Causes of Fetal and Neonatal Death. Agnes R. Macgregor.—p. 332.
Kahn Verification Test: Preliminary Note. W. J. M. Beveridge. —p. 344.
Studies in Refractory Anemia: II. Anemias with Hypocellular, Normoblastic Marrows. L. S. P. Davidson, L. J. Davis and J. Innes.—p. 355.

Journal of Royal Army Medical Corps, London

80:287-338 (June) 1943

Army Medical Services in Action. A. Hood.—p. 287.
Suggestions for "Battle Drill for Stretcher Bearers." R. O. Murray. —p. 291.
Surgical Experiences at a Base Hospital in Egypt. A. McMillan. —p. 300.
*Laboratory Diagnosis of Dysentery Occurring in South African Troops in Middle East. M. H. Finlayson.—p. 307.
Abnormalities of Sleep. J. W. Crofton.—p. 314.

Laboratory Diagnosis of Dysentery.—According to Finlayson, dysentery in the Middle East, as in South Africa, may be caused by helminthic, protozoal or bacterial infection. He investigated 125 cases of dysentery in a South African General Hospital in the Middle East. Thirty-eight cases showed a "bacillary exudate" diagnostic of bacillary dysentery, 57 cases showed an "indefinite exudate," while 30 cases showed no exudate. Eleven of the patients examined, or 8.8 per cent, were found to be infected with Endameba histolytica. Three patients were found to be passing E. histolytica cysts. These patients all showed evidence of previous E. histolytica infection. Thirty-two of the 38 patients showing "bacillary exudate" yielded dysentery bacilli on culture. Bacterium flexneri was isolated in the majority of cases. Bacterium shigae, Bacterium dysenteriae Schmitz and Bacterium sonnei also were encountered. A routine examination of 55 suspected carriers yielded two cultures of B. flexneri, and in 1 case Schistosoma mansoni ova were identified. B. flexneri was isolated from 3 of 12 sigmoidoscope specimens obtained from patients with chronic dysentery.

Lancet, London

1:793-822 (June 26) 1943

*Chemotherapeutic Drugs in Anaerobic Infections of Wounds. J. McIntosh and F. R. Selbie.—p. 793.
Hydatid Disease in Wales. H. R. I. Wolfe.—p. 795.
*Blast, Sudden Death and the Epiglottis. F. C. Eve.—p. 799.
Bilateral Adrenal Hemorrhage. J. E. Morison.—p. 800.
Estimation of "True" Ascorbic Acid in Urine. D. Richter and Phyllis Godby Croft.—p. 802.
Soviet Military Ophthalmology. A. A. Kolen.—p. 804.
Plastic Splints. T. J. B. A. MacGowan.—p. 805.

Chemotherapy in Anaerobic Infections of Wounds.—McIntosh and Selbie state that an analysis of cases of gas gangrene failed to show an appreciable reduction in its incidence in spite of prophylactic and therapeutic chemotherapy. They report the results of some further experimental investigations. A large number of chemotherapeutic substances were tested. It was found that the discrepancy between the experimental and field results seems largely due to the fact that most of the experimental anaerobic infections used as tests are not severe enough to be comparable with the disease in man. The authors have tried to overcome this by devising a standard severe infection in mice. The disease is produced by the intramuscular injection of 100 minimal doses of the bacteria with calcium chloride as a stimulant, followed an hour later in the same site by an injection of the chemotherapeutic drug under test. This interval of an hour does give consistent results with repeated tests. The most effective chemotherapeutic substances against the individual infections were penicillin against Clostridium perfringens and Clostridium oedematiens, and sulfathiazole against Clostridium septicum. The acridines possess a fairly powerful action against all three anaerobes, though in a lower degree. Propamidine had a lower activity against all three organisms, though its individual action in the case of Cl. welchii and Cl. oedematiens compared favorably with the sulfonamides. The tests show that no one drug is equally active against the three common anaerobes responsible for gas gangrene (Cl. perfringens, Cl. septicum and Cl. oedematiens). The best prophylactic results are achieved with the use of a mixture of drugs, and experience suggests the local application of a mixture of sulfathiazole and proflavine. The test the authors have used might be more aptly described as a prophylactic one. Owing to the rapidity with which gas gangrene spreads, the value of local treatment becomes restricted and general treatment, including antitoxins, is then essential.

Blast, Sudden Death and the Epiglottis.—Observations on a man who died from an electric shock suggested to Eve that impaction of the epiglottis may be the explanation of sudden death from blast. The high pressure wave of blast, both in air and in water, compresses the thorax, expelling some air. The chest, being elastic, then expands, and air is drawn sharply inward. This inrush of air might slam down the epiglottis and its effect would be reinforced by the low pressure wave, which sucks the walls of the thorax outward, just as it sucks glass out of windows. The epiglottis might thus be fixed firmly in position, as in the electrocution case, and there might not be enough air in the lungs to expire it upward again. If this is the mechanism in death from blast, survival will depend on such details as whether, at the time of impact, the person has just filled or just emptied his lungs, whether his mouth or nares are open, whether his ribs are rigid or flexible and whether his epiglottis is tilting downward as it does in swallowing. He has made a number of experiments with models representing the thorax and epiglottis; they clearly demonstrated a suction capable of slamming down the epiglottis. The hypothesis must eventually be proved or disproved by postmortem findings rather than by experiments. Positive evidence of impaction of the epiglottis should be diligently sought in blast victims by digital exploration or by postmortem examination. This evidence will not be found until it is specifically looked for. If the hypothesis is correct, death can be averted if the epiglottis is promptly replaced or if the vacuum holding it down is abolished by plunging a hollow needle into the trachea. Artificial respiration is futile till this is effected.

2:1-32 (July 3) 1943

Bacteriology of War Wounds. R. J. V. Pulvertaft.—p. 1.
Tuberculosis in Children: Study of 100 Cases. J. C. Roberts.—p. 2.
*Listeria Monocytogenes Isolated from Case of Infectious Mononucleosis. R. A. Webb.—p. 5.
*Vitamin A and Dark Adaptation. J. Yudkin, G. W. Robertson and S. Yudkin.—p. 10.
Lung Stone Causing Profuse and Recurrent Hemoptysis F. G. Chandler.—p. 13.
Collapse Under Pentothal Sodium Anesthesia. F. Hoenigsberger. —p. 14.

Listeria Monocytogenes in Infectious Mononucleosis.—Webb reports the clinical history of a student, aged 20, who presented the symptoms of glandular fever with swollen lymph nodes, pharyngitis, fever of three weeks' duration and a mononucleosis. The small quantity of serum available from the fourteenth day blood sample was used for the Paul and Bunnell sheep red cell heterophile agglutinin test. This gave positive agglutination to a titer of 1:2,048 (serum dilution). This result affords strong confirmatory evidence of glandular fever. The culture of the blood clot of the arm vein specimen taken on the fourteenth day of the disease yielded an organism the morphologic and cultural characteristics of which suggested Listeria monocytogenes. Its biochemical activities were therefore investigated and compared with those of three stock strains of this organism. The author describes the cultural and biologic tests for this organism, including the appearance of the lesions in experimental animals. He discusses the natural history of disease in animals caused by Listeria ("listeriosis"), and the relation of Listeria to certain types of human meningitis and meningoencephalitis and to infectious mononucleosis. The reported case furnishes the third instance of the association of Listeria monocytogenes and infectious mononucleosis. In the two previous instances the countries of origin were Denmark and the eastern United States of America.

Vitamin A and Dark Adaptation.—Yudkin and his associates show that considerable differences of opinion have been expressed concerning the technic of measuring dark adaptation. Discussion has centered especially about the advisability of having a fixation spot, of showing the test light in flashes and of using a form perception test rather than one of simple light perception. In their opinion many of the differences have been considered too much from the theoretical aspect; too few comparative tests have been done with different apparatus to determine whether and to what extent differences in technic produce different results. Various types of apparatus measure somewhat different functions. Thus the presence of a fixation spot will be of special value in determining the physiologic status of a fairly definite area of the retina; the absence of a fixation spot, on the other hand, allows the subject to find the most suitable parts of the retina with which to view the object and so to approach the practical conditions of vision at night. Using a modification of the Crookes dark adaptation apparatus, the authors have measured the course of dark adaptation in 400 apparently normal subjects. Repeated measurements showed that the readings for one subject are reproducible within narrow limits. In any one individual the variations rarely exceed 0.2 log unit for cone or rod threshold and two minutes for the cone-rod transition time. The course of adaptation varies considerably in different individuals, and the visual threshold in the early stages of adaptation—especially in the first ten minutes—may bear no relation to the readings of the final rod threshold. This confirms the observations of other investigators, but, since many workers still use methods which give readings within a few minutes or even seconds of the onset of dark adaptation, the importance of these observations is stressed. Administration of vitamin A, if it affects dark adaptation at all, always affects the final rod threshold. Other parts of the curve, such as the cone threshold or the cone-rod transition time, may not be affected. If single readings are to be used for assessing visual performance in the dark, they are best made in conditions approaching complete adaptation.

Medical Journal of Australia, Sydney

1:481-504 (May 29) 1943

*Hippuric Acid Test in Thyrotoxicosis. H. R. G. Poate, R. J. Bartholomew and T. E. Wilson.—p. 481.
Blackwater Fever: Review of Case. A. J. M. Nelson.—p. 491.

Hippuric Acid Test in Thyrotoxicosis.—Poate and his associates discuss the results of 183 hippuric acid tests on 133 patients with diseases of the thyroid gland, together with the results of 43 hippuric acid tests on 40 other patients. Basal metabolic rates and blood cholesterol, bilirubin and prothrombin levels were also estimated in many of these cases, but it was not possible to prove a relationship between the results of any of these tests, the age and the sex of the patients, the duration of symptoms and the postoperative reaction. It is shown that if female patients suffering from thyrotoxicosis are grouped on a pathologic basis as (1) having acute thyrotoxicosis (hyperplastic thyroid gland) and (2) having toxic adenomatous thyroids, these two groups differ from each other in age, duration of symptoms and response to the hippuric acid test, and in either series these factors of age, duration of symptoms and conjugation and detoxication are probably unrelated. It is therefore concluded that patients with toxic adenomatous thyroids show greater impairment of the conjugating and detoxicating function of the liver than do patients with acute thyrotoxicosis and that this difference is not entirely due to the longer duration of symptoms or to the increased age of the former group of patients. In the 9 fatal cases of thyrotoxicosis in this series the results of the hippuric acid test were not proportional to the changes in hepatic structure; nor was there a relationship between the result of the hippuric acid test and the pathologic changes in the thyroid gland in those cases in which this gland was removed at operation or necropsy. It is concluded that impaired liver function is not the sole cause of thyroid crises and that from preoperative hippuric acid tests it is not possible to determine in which cases these crises will develop. The authors do not wish to convey the impression that the hippuric acid and other tests have usurped clinical judgment in the treatment of thyrotoxicosis; rather, these tests are subservient to it. The hippuric acid test confirms the beneficial effect of preoperative treatment in cases of thyrotoxicosis and helps to establish the unsuitability of some patients for operation, especially many of those elderly patients with toxic adenomatous thyroids in whom the toxic state has existed for several years.

1:505-526 (June 5) 1943

Anovulatory Menstruation. R. Mackey.—p. 505.
*Rh Factor and Its Application to Obstetric Practice. G. S. Adam.—p. 507.
Some Remarks on Head Injuries. J. E. Hughes.—p. 509.
Granulocytopenia Complicating Administration of Sulfonamides: Report of 2 Cases. F. Catarinich and J. J. Hurley.—p. 511.

Rh Factor and Its Application to Obstetric Practice.—Adam points out that antibodies (agglutinins) for the Rh factor do not normally occur in human plasma, so that when an "Rh negative" subject is given blood from an "Rh positive" donor as a first transfusion the reaction may be absent or slight; but Rh antibodies are nevertheless produced, so that a second transfusion from an "Rh positive" donor may be followed by a fatal reaction. In obstetric practice, however, it is not necessary for a woman to be given a second transfusion before incompatibility reactions involving the Rh factor can occur. It was observed that most of the puerperal patients who had suffered transfusion reactions had been given blood from their husbands. Analysis of several of these cases demonstrated that the recipient was "Rh negative" and had moreover anti Rh agglutinin in her serum and that the husband donor was "Rh positive." The possibility was suggested that the antibodies have been formed in response to an antigen present in the fetus and inherited from the father but absent in the mother. The concept of isoimmunization by the Rh factor was thus developed and new light was thrown on the cause of erythroblastosis fetalis. If a blood transfusion is required for a woman during pregnancy or the puerperium, it is best not to use the husband as the donor, even though he is of the same blood group or a universal donor. It is apparently possible that some degree of isoimmunization may develop without producing signs of erythroblastosis in the infant but sufficient to produce anti Rh agglutinins in the mother's serum. If a woman has given birth to an infant suffering from erythroblastosis fetalis and requires a blood transfusion, in no circumstances must the husband be used as the donor, as he is almost certain to be "Rh positive" and the mother will be "Rh negative"; her serum will contain Rh antibodies and a severe or even fatal reaction will follow. The application of the available knowledge toward prevention of erythroblastosis fetalis lies in the premarital determination of the Rh character of the blood of the two persons concerned. It is doubtful, however, whether knowledge is yet sufficiently full to advise against marriage when the indications (as shown by the Rh factor) are unfavorable. It seems that the potency of the Rh antibodies developed through isoimmunization during the first pregnancy may not be sufficient to interfere with the birth of a healthy child on this occasion but that the risk of erythroblastosis or of icterus gravis neonatorum increases with successive pregnancies, especially if the interval between them is short.

Schweizerische medizinische Wochenschrift, Basel

72:1369-1400 (Dec. 12) 1942. **Partial Index**

*Clinical and Bacteriologic Investigations on Sulfonamide Resistance of Pneumococci. A. Grumbach and R. Hegglin.—p. 1369.
*Elimination of Sulfonamides Particularly of Sulfathiazole in Breast Milk and Significance for Nursling. G. Rieben and J. Druey.—p. 1376.
Experience with Administration of Vitamins to School Children. Mary Stutz and E. Braun.—p. 1380.
Provoked Hyperglycemia Test After Exertion. R. M. Du Pan.—p. 1383.
Collaboration of Physician and Dentist in Dental Focal Infection. W. Wyler.—p. 1386.

Pneumococcic Resistance to Sulfonamide Compounds.—Grumbach and Hegglin examined 62 strains of pneumococci obtained from 36 cases for sensitivity to sulfonamide compounds. Clinical course and in vitro chemosensitivity corresponded in those cases which showed prompt clinical response as well as in those which showed poor clinical response and had a fatal outcome, provided all other causes were excluded and the strains were immediately isolated from the sputum and tested. Decrease in virulence goes parallel with increase in resistance,

and increase in virulence with greater sensitivity to chemotherapy. Massive local administration of a sulfonamide compound increases the resistance to chemotherapy. Of strains which were repeatedly isolated in the course of a chemotherapeutically treated pneumonia, some showed unchanged sensitivity, others were more and still others were less sensitive on second isolation.

Elimination of Sulfathiazole in Breast Milk.—According to Rieben and Druey, at the women's clinic in Basel, Switzerland, about 5.5 per cent of the women are given sulfathiazole for a time after delivery. This raises the problem of the effect of the sulfathiazole on the nursing infant. The authors studied the elimination of sulfathiazole in the milk of 10 lactating women, making 225 analyses. With a daily oral dose of 3 Gm. the elimination varied between 0.5 and 1.5 mg. per hundred cubic centimeters; with a daily dose of 6 Gm., between 1 and 2 mg. The corresponding blood level was generally from two to three times as high as that of the milk. The largest amount of sulfathiazole ingested by a nursing infant in the course of a day was 4 mg. Between 0.3 and 2 per cent of the sulfathiazole ingested by the women appeared in the milk. This amount is too small to exert a therapeutic effect on the nursing infant. In comparative serial tests on 138 infants it was proved that with a maximal maternal dose of 6 Gm. daily for five days the admixture of sulfathiazole to the breast milk exerted no influence on the infant. The weight curves of the nurslings whose mothers received sulfathiazole did not differ from those of the controls. Thus there is no reason to discontinue breast feeding when a mother requires the aforementioned doses of sulfathiazole.

Semana Médica, Buenos Aires

50:1159-1218 (May 27) 1943. **Partial Index**

Autochthonous Murine Exanthematic Typhus in Human Beings. N. S. Lóizaga.—p. 1159.
Congenital Diaphragmatic Hernia. M. J. del Carril and I. Diaz Bobillo. —p. 1169.
Sedimentation Speed of Erythrocytes in Temporomaxillary Arthritis. M. B. Galea and H. D. Bianchi.—p. 1177.
*Influence of Testosterone on Hypertension in Men. A. L. Márquez.—p. 1180.
Grave Febrile Acute Pemphigus. C. R. Castilla, R. S. Aguirre and G. Alvarez.—p. 1182.
Prolapse of Female Urethra. P. Quiroga.—p. 1188.

Testosterone in Hypertension.—The occasional coexistence of hypertension and impairment of sexual potency induced Márquez to inject testosterone propionate in the treatment of hypertension. At first he injected 5 mg. once or twice each week. The effect being slight, he increased the dose to 10 mg., administered two or three times a week. Increasing the individual dose to 25 mg. did not noticeably improve the results obtained with 10 mg. The favorable results sometimes became evident after from 50 to 80 mg. had been injected, but he usually continued the treatment for from two to three months in order to retain the favorable results. He reviews the histories of 5 patients with hypertension in whom injections of testosterone propionate reduced the hypertension considerably and greatly improved the subjective symptoms and the general condition. At the time of his report the improvement had persisted for as long as nine months.

Medizinische Klinik, Berlin

38:337-360 (April 10) 1942. **Partial Index**

Hemorrhoids and Their Treatment by Injection. H. Junghanns.—p. 337.
*Vaccination Against Typhus and Vaccines Used. H. Hetch.—p. 341.
Facilitation, Shortening and Reduction of Risks of Delivery of Old Primiparas. W. Benthin.—p. 342.

Vaccination Against Typhus and Vaccines Used.—Hetch points out that passive immunization against typhus may be obtained with serum from convalescents or specifically immunized animals. The protection conferred is of short duration and the potency of the serums is not uniform. Vaccines prepared from rickettsias hold out best promise for active immunization. The author speaks of Weigl's work with rickettsias from the intestine of lice, Zinsser's studies in which the tunica vaginalis of rats was used and Cox's method of culturing rickettsias on the chorioallantois of incubated eggs. This last vaccine has proved just as effective as Weigl's lice intestine vaccine. Vaccines have also been prepared from the hepatized lungs of experimentally infected mice, rabbits or dogs. A certain cross immunity exists between classic typhus and murine typhus, and repeated injections of vaccine from murine virus confer a certain degree of immunity, but the best protection is conferred by vaccines from homologous rickettsias. In regions in which murine typhus occurs mixed vaccines of Rickettsia prowazeki and Rickettsia mooseri can be used.

Münchener medizinische Wochenschrift, Munich

89:207-230 (March 6) 1942. **Partial Index**

*Sporadic Typhus. K. Luz.—p. 207.
Xiphoidalgia: Its Diagnosis and Treatment. E. Fenz.—p. 210.
Interferometric Method of Abderhalden's Reaction in Research and Clinic. J. Bauer.—p. 214.
Neurohormonal Basis of Pathogenesis of Exophthalmic Goiter. P. Sunder-Plassmann.—p. 217.
Problem of Congenital Defect of Femur and Its Treatment. E. Macksi. —p. 220.

Sporadic Typhus.—Luz reports observations on 41 cases of typhus in Leipzig; 36 of the patients were Poles and 5 were Germans. He stresses that the face of the patient with typhus is red and bloated, the eyelids are swollen, there are conjunctivitis and photophobia, the eyes are glassy, the speech is indistinct and oral pharyngeal symptoms are present. Fever rises rapidly and remains between 39 and 40 C. (102.2 and 104.0 F.) for from ten to fourteen days; fall in temperature is by lysis. The exanthem appears at the height of the fever, between the fourth and sixth days. It begins on the abdomen and shoulders and spreads rapidly over the entire trunk and the extremities. The face always remained free from the rash in the cases seen by the author. Splenic enlargement was present in all except the cases of mild disease. Involvement of the central nervous system was indicated by hallucinations, delirium, excitation and catatonic symptoms. Tremor and muscular contractions, defects in speech and hearing, and increased reflexes were observed. Typhus nodules in the brain were found at necropsy in 3 cases. Lumbar puncture in 6 cases disclosed increased pressure; the protein reaction was positive, and the cell count was between 21 and 78. The arterial pressure was decreased. Except for mild anginal symptoms in a few patients, cardiac symptoms were negligible. Leukocytosis with counts from 10,000 to 13,000 existed at the height of the disease; there was an increase in neutrophils as well as eosinophilia. There were some cases of extremely mild infection without exanthem. In these cases the Weil-Felix reaction was decisive for the diagnosis. The author stresses the great importance of this reaction. Among the Polish patients the mortality rate was 2.8 per cent, whereas among the German patients it was 40 per cent. This corroborates the observation that the disease is more severe in countries where it is not endemic.

Zentralblatt für Chirurgie, Leipzig

69:1-48 (Jan. 3) 1942. **Partial Index**

Experience with Use of Scopolamine-Eukodal-Ephetonine (High Dosage by Intramuscular Administration) in War and Peace. H. Engels. —p. 1.
Experiences with Peridural Anesthesia. W. Hueber.—p. 5.
*Action of Demerol in Surgery. T. Anda.—p. 8.
Fish Mouth Incision for Thigh Amputation in Gangrene. K. Scheele. —p. 11.
Observation on Local Tetanus. L. Rathcke.—p. 13.

Demerol in Surgery.—Anda reports observations on 150 persons to whom Demerol was given for the control of pain after ventriculography, brain operations and cerebral contusion; also before and after operations for gastric carcinoma, appendicitis, hernia and cholelithiasis, after operations for spinal tumor and for endarteritis obliterans. Demerol was administered in tablet form, by intramuscular injection and in suppositories. The author stresses that Demerol has primarily a spasmolytic effect, the analgesic action being less prominent. It was particularly effective in cases in which the cranial pressure was increased. It prevented vomiting in abdominal operations performed under local anesthesia. The analgesic effect of Demerol after major operations is less than that of morphine. Secondary effects and habituation were not observed.

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Book Notices

Gout. By John H. Talbott, M.D., Associate in Medicine, Harvard University, Boston. Edited by Henry A. Christian, A.M., M.D., LL.D., Clinical Professor of Medicine, Tufts College Medical School, Boston. [Reprinted from Oxford Loose-Leaf Medicine, with the same page numbers as in that work.] Cloth. Price, $2.50. Pp. 79-134, with 56 illustrations. New York, London & Toronto: Oxford University Press, 1943.

This small book is one of the best monographs on this poorly understood condition. It is a reprint from the Oxford Loose-Leaf Medicine. The book includes a comprehensive discussion of all phases of the disease and the results of the author's clinical and laboratory researches. Gout makes up about 5 per cent of patients who come to arthritis clinics. Clinical control in the acute stage can be accomplished by proper therapy. The author presents an accurate description of clinical gout and the researches on the metabolic phenomena of the gouty dyscrasia. The book contains many interesting and instructive illustrations. There is a brief historical section. The chemical, clinical, hereditary and metabolic aspects of the condition are well covered. The complications, associated diseases and differential diagnosis are described. The treatment is divided into that pertaining to prevention, the acute attack, the intercritical period and the chronic stage.

China's Health Problems. By Szeming Sze, General Secretary, Chinese Medical Association, Washington, D. C. Boards. Price, $1. Pp. 60. Washington, D. C.: Chinese Medical Association, 1943.

The author is editor of the *Chinese Medical Journal* and general secretary of the Chinese Medical Association. Since his visit to America in 1941 he has received requests for information about China's health problems and this small book contains that information. China has high morbidity and mortality rates, the former being 4 per cent of the population of 400,000,000 and the latter 25 per thousand of population; on any one day some 16,000,000 persons in China are ill, and 10,000,000 persons die each year. Medical facilities with which to fight these high rates are meager. Only 12,000 doctors and 38,000 hospital beds are available, whereas on the basis of moderate estimates of authorities there should be a minimum of 266,000 doctors and 2,000,000 hospital beds. Practically all of the modern facilities are in the large cities, leaving the immense rural areas, where 84 per cent of the people live, virtually without any facilities. A determined effort by the government and by certain organizations and individuals is being made to improve the health of the Chinese, and the foundations for a national health system have been laid. The author says, however, that since 84 per cent of the population are incapable of paying for private medical care it is agreed that the only solution is state medicine, particularly in the rural areas. No attempt will be made to force state medicine on the cities, where the public demands the services of private practitioners. The government's policy is to organize each of twenty-four provinces into districts, each having several counties. A province will have one hundred district health centers, each with some 30 hospital beds for emergency cases. A county will have sub-health centers, which in turn would be served by health stations in each village. This plan forms a working basis. Although not ideal, it has been only partly accomplished owing to limited funds and difficulties thrust on China in the last six years by Japan. To forward this plan there is the National Health Administration, a National Institute of Health which trains personnel and carries on research, the National Epidemic Prevention Bureau, the Central Narcotics Bureau, the Central Drug Factory and the Surgical Equipment Factory, which provide drugs, supplies and equipment for the health services. Up to 1942 there had been established in areas not occupied by the Japanese seven hundred and eighty-three district health centers, sixteen provincial medical centers and fifteen provincial hospitals; in addition, one hundred and fifty nongovernmental hospitals have linked their facilities with the National Health Services.

The greatest needs in the state medical system are hospitals and technical personnel. The author believes that the remaining one hundred and sixty nongovernmental hospitals in China should take their place, as far as possible, in a coordinated national system. These hospitals are willing, and a beginning has been made in some provinces. The boards of management of these additional hospitals, most of which are mission hospitals, are becoming more and more Chinese as the financial support obtained locally increases.

About 150,000,000 persons are estimated to have trachoma, 1,000,000 to have leprosy, 32,000,000 to have tuberculosis and 40,000,000 to have syphilis or gonorrhea, most of which diseases in health conscious countries are on the decline. The aim of the government is to educate the people in health matters. To aid in this movement the Health League of China, organized in 1940, is promoting health education in places not yet covered by the governmental health centers. China has twenty-eight medical colleges, ten national, nine provincial and nine private medical colleges. The biggest problem in medical education lies in the small schools of low standards which the Ministry of Education will have to subsidize to help them attract better teachers. Progress had been made up to the outbreak of war with Japan in 1937, but the war has seriously affected this program.

The Chinese Medical Association of some 3,000 members, which is practically the only medical scientific society, cooperates closely with the government. The Medical Practitioners' Federation, which is less efficiently organized, is composed largely of the poorly qualified doctors; in fact it is a federation of practitioners' unions which the law requires to open its membership to registered practitioners, irrespective of qualifications. The leaders of the Chinese Medical Association and the Medical Practitioners' Federation recognize the need for closer cooperation, but that will come only when the number of unqualified practitioners becomes a negligible part of the medical profession.

China is a land of famines which follow floods in the valleys of the Yellow and Yangtze rivers or droughts in the great plains of the northwest. China has its National Relief Commission and Red Cross, but the latter should be reorganized. The United States since 1940 has sent lend-lease medical supplies and technical personnel to aid the Chinese army and the National Health Administration. Many other national Red Cross societies sent funds and supplies until the World War began in 1939, when gifts ceased with the exception of those from the American Red Cross. China's friends in many countries have organized United China Relief, the American Bureau for Medical Aid to China, the missionary bodies, the Associated Boards for Christian Colleges of China, China Child Welfare, Inc., of New York and other cultural and relief bodies.

The author closes his book with a brief chapter on medical supplies, listing those which are particularly scarce and the raw materials for the manufacture of medical supplies which are sufficient.

Emotion in Man and Animal: Its Nature and Relation to Attitude and Motive. By Paul Thomas Young. Cloth. Price, $4. Pp. 422, with 28 illustrations. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited, 1943.

This is another of those "run of the mill" textbooks whose author professes to offer an authoritative discussion relative to problems of human behavior. As such it is probably no worse and certainly no better than most such works which are now utilized to teach psychology in many of our presumed institutions of higher learning. This is only another way of stating that most such volumes are completely outdated and many of their concepts long discarded or, in some instances, the discussions although supported by modern theories and experimental research are entirely inadequate in attempts at presentation of dynamic emotional concepts. It is discouraging to read a book which, as the author states in the preface, has not only been arranged in form convenient for classroom use but which he has obviously intended for popular consumption, to find that the contributions of leading past and present research workers in the field of human and animal emotions have been either vaguely mentioned or entirely ignored. The anthropologic, experimental and research contributions of such men as Frazer, Mantegazza, Malinowski, Roheim, Freud, Carl Abraham, Magnus Hirschfeld, Franz Alexander and his co-workers, Kurt Lewin and his group, Carl Menninger and his associates, H. W. Gant and Jules Masserman, only to mention a few, are either ignored or are referred to quite casually and superficially. Freud's monumental contributions to the understand-

ing of human emotions receive only passing attention in the text and are left out of the recommendations for reading as well as the author's index. It seems unfortunate to this interviewer that modern dynamic psychology as understood and taught by prominent men and women in the field has not been introduced to more of our larger universities.

A Manual of Otology, Rhinology and Laryngology. By Howard Charles Ballenger, M.D., F.A.C.S., Associate Professor of Otolaryngology, Northwestern University School of Medicine, Chicago. Second edition. Cloth. Price, $4. Pp. 334, with 117 illustrations. Philadelphia: Lea & Febiger, 1943.

Obviously no author could write a manual on diseases of the ear, nose and throat that would satisfy every laryngologist who is engaged in teaching undergraduates. The material that must be compressed within the narrow confines of a small book is too vast to permit adequate condensation without slighting certain topics which to some teachers are more important than those selected by this author. If the purpose of such a book is to present in as concise a manner as possible the essential and important features of the specialty and to emphasize vital diagnostic signs, Ballenger's book comes as close to filling the bill as is humanly possible. In the new edition the text includes the latest data; sufficient emphasis is still placed on the important and serious complications which may often perplex the general practitioner, as indeed they frequently do the specialist. The chapters on neck infections, foreign bodies in the air passages, intracranial complications and Ménière's disease are worthy of special mention. The student or general practitioner who uses a book such as Ballenger's should always bear in mind that the author is presenting only the bare essentials which are offered as foundation stones on which the reader is to build as he progresses in the practice of medicine and his experience widens. Because of the limitations of space the text must be condensed and it is therefore important that it be read carefully, since every sentence means something. One might add only the tiny regret that the author had so little to say on the subject of the sulfonamides in otolaryngology, a topic on which much has recently been written.

Bacteriology for Students of Medicine and Public Health. By Einar Leifson, Ph.D., Professor of Bacteriology, University of South Dakota School of Medical Sciences, Vermillion. Medical Students' Series, edited by Fred C. Zapffe, Secretary, Association of American Medical Colleges, Chicago. Cloth. Price, $5. Pp. 526, with 153 illustrations. New York & London: Paul B. Hoeber, Inc., 1942.

The first half of this book is devoted to the general aspects of bacteriology as found in most textbooks. The author then takes up epidemiology and biostatistics together with the major communicable diseases, because he "feels that it is just as important, if not more so, for the medical student to understand bacteriology as it is for him to know it." The author indulges in considerable freedom, such as placing the tularemia organism with the Brucella group and the cause of rat bite fever with Actinomyces. The terms "undulant fever" and "brucellosis" are used interchangeably in different parts of the book. Some of the charts showing incidence of disease by years unfortunately lack figures for the last decade. In one instance a commercial preparation is specified by name for use as a disinfectant. These isolated instances do not detract from the book as a whole, however, and are offset by many excellent features.

Discovering Ourselves: A View of the Human Mind and How It Works. By Edward A. Strecker, A.M., M.D., and Kenneth E. Appel, Ph.D., M.D. In collaboration with John W. Appel, M.D. Second edition. Cloth. Price, $3. Pp. 434, with 28 illustrations. New York: Macmillan Company, 1943.

The first edition of this work was published more than twelve years ago. The book explains in nontechnical language the essentials of modern psychology and the principles of psychiatry and mental hygiene. The usefulness of the previous edition prompted the development of the present volume, which includes new chapters on emotion, fear and anger and incorporation of the ideas of psychosomatic medicine. There is also attention to special problems created by the war. Another addition to the work is an appendix providing a series of questions on the individual chapters. The book is well printed, easily readable and can be recommended to physicians as a work which they, in turn, can confer on patients who need therapeutic literature.

Trail to Light: A Biography of Joseph Goldberger. By Robert P. Parsons. Cloth. Price, $3. Pp. 353, with portrait. Indianapolis & New York: Bobbs-Merrill Company, 1943.

The story of the accomplishments of Dr. Joseph Goldberger should by this time be well known to most members of the medical profession. His life was devoted largely to study of infectious diseases made under the auspices of the United States Public Health Service, but the climax of his career came with his basic contributions to our knowledge of pellagra. The book is based largely on letters which Dr. Goldberger wrote to his wife over some twenty-three years and on collections of newspaper clippings and other memorandums which had been assembled in a chest which was made available to the biographer. Dr. Goldberger's career might well serve as an inspiration to young men who contemplate work with the United States Public Health Service as a career.

Fractures and Fracture Treatment in Practice. By Kurt Colsen, M.D., Tutor to the Department of Surgery, Registrar to the Surgical Firm of the University of the Witwatersrand, Johannesburg. Fabrikoid. Price, 12s. 6d. Pp. 147, with 157 illustrations. Johannesburg: Witwatersrand University Press, 1942.

This handy book was written by a man who has conducted the fracture tutoral course in connection with the class of systematic surgery in the Witwatersrand University at Johannesburg, South Africa. It serves its purpose well. The manuscript is brief and to the point. The illustrations are line drawings and are simple and instructive. The book reflects the teachings of Böhler and Watson Jones. It is an excellent book for medical students and general practitioners.

Whooping Cough. By Joseph H. Lapin, B.Chem., M.D., Adjunct Pediatrician, Bronx Hospital, New York. Cloth. Price, $4.50. Pp. 238, with illustrations. Springfield, Illinois & Baltimore: Charles C Thomas, 1943.

This monograph is written in an easy, understandable style. It contains abstracts of all the worthwhile literature on whooping cough. It covers epidemiology, immunology, bacteriology and the preparation of various endotoxins and exotoxins. It also describes the clinical manifestations of the disease. The author has attempted to make a critical analysis of the literature and gives his own interpretations and evaluations of the various studies. In this he has succeeded very well. The illustrations are excellent. It is an invaluable book for the investigator and is equally valuable and practicable for the practitioner.

Central Autonomic Regulations in Health and Disease with Special Reference to the Hypothalamus. By Heymen R. Miller, M.D., Associate Attending Physician, Montefiore Hospital, New York City. Introduction by John F. Fulton, M.D., M.A., D.Phil., Sterling Professor of Physiology, Yale University, New Haven. Cloth. Price, $5.50. Pp. 430, with 61 illustrations. New York: Grune & Stratton, 1942.

In the coordination of actions of the human body the cerebral cortex and the hypothalamus play most important parts. This book offers a concentration of the general physiology of the autonomic nervous system and special considerations of the manner in which the temperature of the body, the use of water and minerals, metabolism, circulation, respiration, sleep, the emotions and other functions are controlled. The arrangement of the book is such that the fundamental anatomy forms the subject of the concluding chapters. As is pointed out by Dr. John F. Fulton in his preface, the physiology of the autonomic nervous system has tremendous application to clinical practice. The author has considered the available literature, most of which is reviewed in this book. The case reports in many instances indicate the technic of application of the knowledge concerned to the care of the sick.

Mercy in Hell: An American Ambulance Driver with the Eighth Army. By Andrew Geer, Captain, American Field Service. Cloth. Price, $2.75. Pp. 264, with illustrations. New York & London: Whittlesey House, McGraw-Hill Book Company, Inc., 1943.

This is a record of the work of an ambulance driver who was with the Eighth Army in the battle in North Africa up to the time of the Tunisia campaign. It is a graphic record of the part played by the Medical Corps in a situation in which it worked under tremendous difficulties. Unfortunately the author lacks the literary ability necessary to dramatize the terrifically dramatic events in which it played a considerable part.

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Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

INTERMITTENT HYDRARTHROSIS

To the Editor:—A woman aged 35 has been married five years and has never been pregnant. The patient's chief complaint is that during the past four or five years both knees have become swollen to such an extent that they cannot be bent. This swelling comes every ten days and lasts for three or four days. After five days the swelling disappears gradually so that she can bend her knees again. For about one week there is no swelling at all but at the end of the week the swelling returns. There is no relationship in time to her menstruation or to the weather. The swelling is the same in the morning as it is in the evening. There is dull pain in the knees at the time they are swollen, but there is neither redness nor fever. The swelling consists of a pronounced edema above and below the knee joint. Menstruation is regular and without pain. Examination of the abdomen and pelvis does not reveal anything abnormal. Vessles are prominent in the thighs above her knees. The history and findings are otherwise negative except that she is nervous and comes of a nervous family. I have seen the patient when the knees were swollen, and the swellings were prominent.

M.D., New York.

ANSWER.—This patient appears to have intermittent hydrarthrosis. During approximately a hundred years since the disease was recognized the incidence of reported cases has been only about 1 each year. Many cases, however, are not reported.

Two varieties of the disease are encountered. The first type has been designated "symptomatic intermittent hydrarthrosis" because the recurring articular swellings prove to be early symptoms of a progressive rheumatoid type of arthritis which later appears in the joints involved by the periodic edema or in other joints. In this form the cycles are often regular for varying periods, sometimes for many months. Later the periods of freedom between swellings becomes shorter and the degree of recovery from attacks is less complete. A second form of the disease has been called "idiopathic intermittent hydrarthrosis" because some observers believe that neither rheumatoid arthritis nor any other cause has been demonstrated. Most persons with either form eventually acquire rheumatoid arthritis. Furthermore, synovial membranes from both clinical types of the disease removed in attempts at surgical cure have shown identical pathologic changes, namely synovial edema and villus formation, scattered and follicle-like infiltration of subsynovial tissues with lymphocytes and endothelial cells, regions of hyaline degeneration of fibrous tissue, thickening of the endothelial layer by enlargement of endothelial cells, and reduplication of the lining endothelium. Thus, remissions in both forms are only apparent. The underlying synovitis is permanent and progressive.

The syndrome of intermittent hydrarthrosis affects men and women with equal frequency. The remitting swellings always appear in the knee, although occasionally another joint such as the ankle, hip and rarely a joint of the upper extremity may also be involved. The intervals of freedom vary in length from two or three days to three weeks, being in most instances from seven to ten days. The swellings generally last three to five days. Attacks cause discomfort in the form of swelling, tightness and stiffness from distention of the joint by exudate. Pain is generally moderate but may be severe and may require rest in bed or immobilization of the affected joint. The attacks are not associated with fever, and despite the acuteness of the swelling there is no redness, pronounced heat or notable tenderness and there are no striking signs of constitutional reaction during the attacks. When the swelling has cleared the joint may appear to be completely recovered. In some instances periods of complete freedom from attacks may intervene. Such periods may be of months' or years' duration only to be followed by recurrence of regular cycles.

Laboratory data are variable. Some patients (in whom the condition is of the so-called symptomatic form) have secondary anemia and elevation of the sedimentation rate.

The cause is unknown. Its periodicity suggested to many investigators that the condition might represent an allergic reaction either to bacteria or to some other irritant agent. However, such evidence as has been adduced to support the allergic hypothesis is purely inferential.

During the acute attacks, patients are more comfortable at rest. Some comfort may result from supporting the knee with an elastic bandage. Physical therapy and acetylsalicylic acid generally provide some relief during the attacks. Measures worthy of trial in an attempt to prevent recurrences of the attacks include intravenous administration of typhoid vaccine and removal of infected foci if any can be demonstrated. Synovectomy has been recommended by some physicians, but others have found that progressive arthritis appears (sometimes in other joints) despite synovectomy. The disease is said to have been stopped after administration of ergotamine tartrate in doses of 1 mg. daily for approximately two months, followed by repeated courses of one tablet daily for periods of about a month, when attacks tend to recur. Attacks are said to have stopped in 1 patient when foods to which the patient was sensitive were eliminated from the diet. "Desensitization" with histamine by means of intravenous and intramuscular injections of this substance has failed to influence the course of the disease in several instances.

The prognosis must be considered decidedly uncertain. In many instances the regular recurrence of attacks has continued for years, even for two or more decades, without any change in the nature of the symptoms. In most instances, however, the patient eventually acquires definite rheumatoid arthritis.

DICHLOROACETIC VERSUS TRICHLOROACETIC ACID FOR WARTS

To the Editor:—I am interested in the use of bichloracetic acid as a corrosive agent in the treatment of warts, although I have seen no literature on the subject. However, this compound is inordinately expensive. Is there any great superiority in the use of this compound as compared with trichloroacetic acid? If so, are there any approved, relatively inexpensive products with this active ingredient which could be used for this purpose?

Colonel, M. C., U. S. Army.

ANSWER.—It is true that dichloroacetic acid, marketed by the Kahlenberg Laboratories under the name "bichloracetic acid," is somewhat more expensive than the better known trichloroacetic acid, which is an official drug listed in the U. S. Pharmacopeia XII. Chemical supply houses currently list a reagent grade of dichloroacetic acid at a cost of $4.54 per pound, while trichloroacetic acid U. S. P. costs only $3.45 per pound. The current retail price of "bichloracetic acid" in the ½ ounce size with kit for application is $2.50. In contrast, it is possible for a pharmacy to purchase dichloroacetic acid from a photographic supply house, bottle it in 1 ounce battles (the bottle costing approximately 25 cents) and sell it for $1.

When used in concentrated form for caustic action, the two give much the same result. The stinging due to the trichloroacetic acid is slightly greater, but both cease to sting in a few minutes. The area treated becomes white and loses sensation, while about it the skin becomes pink and slightly swollen. In a short time the swelling and flush subside and a grayish white area is left, about which a narrow zone of deep red is seen, which persists. So far as could be seen by a trial on the writer's forearm, the action of the two drugs in concentrated form, the "bichloracetic acid" sold by Kahlenberg and a saturated solution of trichloracetic acid made by adding a few drops of water to some crystals of trichloroacetic acid, was equal, causing a superficial necrosis of the same degree in the two.

THERAPEUTIC FASTING FOR HYPERTENSION

To the Editor:—I am interested in the therapeutics of "fasting." Is there any authoritative literature on this subject, especially as to its effect on degenerative diseases and hypertension? Can you discuss it briefly?

M.D., Canal Zone.

ANSWER.—The effect of fasting and of modified fasting (consuming only fruit and vegetable juices) in hypertension was studied by Kampmann in Volhard's Clinic (Frankfort on Main). Kampmann and Volhard recommend the use of fasting as a means of reducing high blood pressure. However, Volhard points out that a high blood pressure should be regarded only as a symptom, like fever, and the specific cause should therefore be sought and treated. Nevertheless the reduction of a high blood pressure by fasting, modified fasting or fluid and salt restriction may alone suffice to bring about considerable general improvement in some cases. Recently Laird reported a 20 per cent reduction in blood pressure as one of the incidental benefits derived by internees in a Japanese internment camp where the food supplies were quantitatively inadequate.

The reduction in some cases of high blood pressure by fasting or food restriction is attributed to a reduction of the ordinary metabolic strains on the circulatory system and the kidneys. Fasting is also regarded by some as beneficial in other conditions, because it is believed that it gives the eliminative organs a chance to reduce accumulated toxic products, facilitates more complete oxidation in the body, uses up or

reduces nonessential tissues and may even promote rejuvenation, but proof of such views is still lacking.

The subject of therapeutic fasting and its limitations is discussed in the following articles:

Kampmann, W.: *Deutsches Arch. f. klin. Med.* **184**: 216, 1939.
Volhard, Franz: *Ztschr. f. d. ges. Neurol. u. Psychiat.* **167**: 485, 1939; *Verhandl. d. Deutsch. Gesellsch. f. Inn. Med.* **51**: 299, 1939; abstr. THE JOURNAL, Sept. 9, 1939, p. 1047.
Therapy by Fasting, Berlin Letter, *ibid.*, Nov. 18, 1939, p. 1890.
Laird, C. N.: *Nutrition Rev.* **1**: 97 (Feb.) 1943.
Heun, E.: *Fortschr. d. Med.* **52**: 264 (March 26), 289 (April 2), 312 (April 9) 1934.
Determann, H.: *Balneologie* **3**: 139 (March) 1936.
Buchinger, O.: *Wien. med. Wchnschr.* **90**: 491, 1940.
Bergfeld, W.: *Deutsche med. Wchnschr.* **66**: 1107 (Oct. 4) 1940.
Grote, L. R., *ibid.* **63**: 1733 (Dec. 1) 1939.
von Dvigalski, W.: *Fortschr. d. Therap.* **15**: 133 (March) 1939.
Ruschke, C.: *Therap. d. Gegenw.* **80**: 72 (Feb.) 1939.
Günther: Hunger und Durstkuren, Leipzig, Hirzel, 1930.
Eisenberg, W.: *München. med. Wchnschr.* **82**: 1441 (Sept. 6) 1935.

GAUCHER'S DISEASE AND PREGNANCY

To the Editor:—A woman aged 26, who is two and a half months pregnant, reports a splenectomy performed in 1939. The pathologic report which I obtained was Gaucher's disease. Since her operation she has presumably been well. The only positive finding on physical examination is an enlargement of the liver, especially its right lobe. This particular border is palpable two fingerbreadths below the umbilicus. No laboratory studies have yet been undertaken. My question is What is the effect of pregnancy on this disease? and likewise What is the effect of this disease on pregnancy? I should appreciate any information you may have, with some bibliography if available.

M.D., New York.

ANSWER.—A number of cases are recorded in which pregnancy occurred in patients with Gaucher's disease. Apparently pregnancy does not have any special effect on this disease. Several possible effects of Gaucher's disease on pregnancy are noted. One patient had pain in the region of the spleen during the fifth month of pregnancy. Another patient had postpartum bleeding after each of two pregnancies. This presumably was related to a diminution in the platelet count. The diagnosis of Gaucher's disease was made in one woman following a miscarriage. Whether this was due to the disease is uncertain.

References:

Anderson, J. P.: Hereditary Gaucher's Disease, THE JOURNAL, Sept. 23, 1933, p. 979.
Bonta, M. B.: Splenectomy in Gaucher's Disease, *Arch. Surg.* **21**: 851 (Nov.) 1930.
Jones, A. P.: Unusual Spleen Cases, *Ann. Surg.* **109**: 960 (June) 1939.
Pool, E. H., and Hipsley, R. W.: The Effects and Results of Splenectomy in a Variety of Conditions: Gaucher's Disease, *Surg. Clin., North America* **10**: 435 (June) 1930.
Pool, E. H., and Stillman, R. G.: Surgery of the Spleen, New York, D. Appleton & Co., 1923, pp. 229-238.
Wilensky, A. O.: The Indications for Splenectomy in Gaucher Splenomegaly, *J. M. Soc. New Jersey* **39**: 531 (Oct.) 1942.

FOOT AND PALM PRINTS TAKEN AT BIRTH

To the Editor:—My attention has been called to the question of the reliability of footprints and palmprints of the newborn child as a method of identification after the passage of several days or weeks. One hospital superintendent states that a company supplying a birth certificate service claims that "The identity of the child is established at birth by its footprints or palmprints. . . . Hospitals and doctors are protected against confusion of identity and liability of resulting litigation. Irrefutable evidence is in the hands of parents and child for use on occasions arise throughout life." The superintendent then adds that three years ago he made a test in his institution to determine whether this statement was true or not. The footprints of twenty children were taken at birth and again at discharge about twelve days later. These forty certificates were coded and then passed to the superintendent of nurses and to the superintendent. Both failed completely in matching the two sets. In other words, twelve days after birth neither one could prove the identity of the child by footprints checked against those made at birth. The superintendent also states that a local police department confirmed his belief that footprints were worthless as a method for later identification of children. Have there been any studies made of this problem? If so would you be kind enough to give us any information that would be of aid to the hospitals in deciding whether to continue with the footprinting system?

D. H. Palmer, New York.
Research Engineer, Hospital Bureau of Standards and Supplies.

ANSWER.—Diligent search of the available sources of information has failed to reveal information for the unqualified answer to this question, although the subject is of considerable importance. It may be noted, however, that senate bill 258 of the general assembly of Pennsylvania, which became law on May 26, 1943, provided among other things for the taking of fingerprints or footprints of infants and the filing of these in places where maternity cases are handled. In the absence of information to the contrary it seems probable that there are no changes in the fingerprints or footprints of infants after birth which would make it impossible to use them for identification after an interval of several weeks or even months, provided the prints are taken by an experienced person.

BONE MARROW APLASIA AND OTHER PATHOLOGIC CHANGES FROM EXTREME MALNUTRITION IN CHILDHOOD

To the Editor:—On a recent Sunday morning a boy aged 9 was found dead in bed. He had been in school the previous Friday. He had not been examined recently by a physician. The coroner's chief physician who performed an autopsy diagnosed the cause of death as "extreme malnutrition." In addition there were ulcerations in the intestines not typical of any specific disease, considerable wasting and a great deal of atrophy of the bone marrow. What are the autopsy findings that would justify such a diagnosis?

M.D., Pennsylvania.

ANSWER.—The observations found at necropsy of ulcerations of the intestine, considerable wasting and atrophy of the bone marrow are compatible with "extreme malnutrition." One of the most striking things about children suffering from severe grades of malnutrition is their vulnerability to infection. One doubts if the chief cause of death was simply "extreme malnutrition" since this child was able to attend school two days before death. Persons with a long standing infectious process or an overwhelming sepsis or seriously malnourished children who develop an infection of recent date present "aplasia" of the bone marrow. As Kracke states (Diseases of the Blood and Atlas of Hematology, ed. 2, Philadelphia, J. B. Lippincott, 1941) "the marrow is usually highly cellular but is subjected to a physiological paralysis whereby it is unable to either produce or deliver the normal number of red cells." The circulating blood then shows a decrease in the number of granulocytes, erythrocytes and thrombocytes.

It would be extremely interesting and pertinent to have had a postmortem blood culture and stool culture as well as to study the intestinal ulcers microscopically.

SMALLPOX VACCINATION AND ECZEMA

To the Editor:—My son, aged 10 months, was recently seen by a pediatrician who advised against smallpox vaccination when he was told that the infant had suffered eczema from birth to 6 months of age. The eczema covered the face and scalp and was of the papulovesicular, coalescent type. A skin test showed that he was sensitive only to potato but later, on ingestion, was unable to handle egg. The eczema was alleviated by aluminum acetate and cleared completely on tying the hands. He has been completely free the past four months. The pediatrician claims that there are cases in which eczematoid infants have developed following vaccination a generalized papular-pustular rash with symptoms so severe that fatalities have occurred. I should like to know if this is true, and, if so, would you still advise vaccination?

Lieutenant, M. C., A. U. S.

ANSWER.—It is generally agreed that there is danger of generalized vaccinia (eczema vaccinatum) following smallpox vaccination of patients with eczema or impetigo. While such an occurrence is rare, and there are no data in the literature to indicate the number of patients with impetigo or eczema who do not develop generalized vaccinia (Ellis, F. A.: Eczema Vaccinatum, Its Relation to Generalized Vaccinia, THE JOURNAL, May 25, 1935, p. 1891), the possibility of serious or even fatal consequences in those who develop this condition is too great to warrant the risk of vaccination. Thus, Bret Ratner (Allergy, Anaphylaxis and Immunotherapy, Baltimore, Williams and Wilkins Company, 1943, p. 279) unequivocally states that no person suffering from skin lesions should be vaccinated. J. W. Tedder (*Arch. Dermat. & Syph.* **34**: 1008 [Dec.] 1936) says that, since vaccination is an extremely common procedure and generalized vaccinia rare, it must be assumed that even though the virus is present in the blood stream the balance between the virus and the virucidal substances is not frequently broken. Eczema, by lowering the immunity of the skin and affording a favorable soil for the multiplication of the virus, tends to upset this balance by causing more organisms to enter the circulation.

The most recent report of abnormal reactions following vaccination is that by L. S. P. Davidson and L. J. Davis (*Lancet* **2**: 103 [July 24] 1943). The authors report 1 case of generalized vaccinia and 3 of generalized purpura. Death occurred in 1 of the latter group. Only 1 patient was allergic (asthma). One patient gave a positive family history of allergy but had no manifest allergic symptoms. The other 2 patients were not allergic.

Generalized vaccinia is rare. On this all authorities agree. It is more likely to occur in allergic than in nonallergic persons. In view of the recent allergy in this case it would seem advisable to wait until the child is clear of eczema for about a year before vaccinating, unless there is definite danger of exposure to smallpox. If the latter is true, the danger from generalized vaccinia is too slight to weigh against the danger of smallpox. When vaccination is done, suspected foods or scrupulously avoided even in minutest quantities for several environmental causes of allergy in a child like this should be weeks before and for two to three weeks after vaccination.

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OBSCURE RECURRENT LESIONS OF MOUTH

To the Editor:—A well built, lean, professional man aged 38 has had periodic attacks of stomatitis for eleven years, worse in the last nine. The lesions begin as red areas of various shapes and sizes, which ulcerate in a few days leaving a gray or red base. At this stage bad breath develops, some regional adenitis, fever up to 103 F. and 11,000 white blood cells. Lesions are located in the lower fornix of the mouth between the cheeks and the jaws, the upper fornix, the floor of the mouth beneath the tongue, the uvula, the pharynx and the upper surface of the tongue in that order of severity and frequency. The gingiva itself is not involved except in one place, where a first lower molar is missing. There the upper surface of the gingiva was once involved. The alveolar bone and gingivae are otherwise normal. Each attack has a gradual onset and, after reaching a peak, resolves rapidly. The attacks last four to seven weeks, usually six weeks; the peaks of the attacks are about two to four months apart, usually three months; and the period between attacks when he is entirely well is one to six weeks, usually four weeks. During several attacks there has been slight burning on urination and a 2 mm. zone of redness of the glans about the meatus. The only other significant fact is that with rare exceptions he has not had a bowel movement without an enema for nine years. He gets a headache and feels sluggish every three days and takes an enema of 1 quart of lukewarm tap water. The stools are hard and normal in color. The barium enema revealed some hypermotility of the descending colon. Gastric analysis, urine and blood studies, including Wassermann and Kahn tests, were normal. Cultures of the lesions were reported to show thrush and other organisms and a "slight indication of Vincent's." Treatments tried include large doses of hydrochloric acid, mesotrophanin intravenously, various local oxidizing agents, daily injections of 100 mg. of niacin with 33 mg. of thiamine and 1 Gm. of sulfathiazole every four hours. Malaise followed five doses of sulfathiazole but he was close to malaise anyway. None of these treatments were consistently followed by improvement. No correlation with seasons is apparent; but there is some correlation with periods of mental stress. Suggestions would be appreciated.

M.D., California.

ANSWER.—The recurrent oral lesions have apparently been well studied. They do not suggest a local cause, although more complete bacteriologic data might be useful. The failure of arsenicals, vitamin B concentrates and one of the sulfonamides is helpful in a negative way.

The lesions might have a neurogenic basis, with the local infection being secondary and atypical. The occurrence during periods of stress and in association with a spastic colon is suggestive.

There would be several trial approaches possible:

1. Treat the general and intestinal tension by use of sedatives (phenobarbital ¼ to ½ grain [0.016 to 0.032 Gm.] three times daily) plus a drug aimed at autonomic nerve depression. Combine this with a bland diet.

2. Prepare a vaccine from the stools for desensitization (as suggested for various lesions by MacIntosh and Hill).

3. Try succinylsulfathiazole in an attempt to change the intestinal flora. This drug is almost nontoxic, is scarcely absorbed into the blood, and often softens the stool. The initial dose is 0.25 Gm. per kilogram of body weight, followed by 0.25 Gm. per kilogram daily divided into four or more doses.

INHERITANCE OF PSEUDOHYPERTROPHIC MUSCULAR DYSTROPHY

To the Editor:—A primipara aged 36, now five months pregnant, has had progressive muscular dystrophy of a pseudohypertrophic type with involvement of the back and thigh muscles for approximately three and a half years. She had some sort of infection called meningitis at the age of 2½ years and she was unable to walk well until she was 5 or 6 years of age. With the resumption of walking she developed normally and was able to go through high school and a teaching career, engaging in horseback riding, basketball, tennis and the other common sports without noting any weaknesses. The trouble has been gradually making its appearance during the last three and a half years, and since the beginning of pregnancy the symptoms have been aggravated. Can the patient be carried safely through several more months of pregnancy and then an elective cesarean section done with sterilization? What is the prognosis with regard to the baby? Do you advise interruption of the pregnancy at once with sterilization? One brother died at the age of 19 with so-called Bright's disease, but he had a weak back. One sister died at the age of 30 with pneumonia, but she had had a weak back for five years preceding the pneumonia on account of typhoid.

M.D., South Carolina.

ANSWER.—It is doubtful that the infection at the age of 2½ years called meningitis has any direct relation with the patient's present condition. Although somewhat late in onset, it is probable that the patient is suffering from pseudohypertrophic muscular dystrophy, although such a diagnosis cannot be made without equivocation, as there was a long history of good health and normal muscular action up to the third decade of life. It is not unusual, however, for the condition to be aggravated during pregnancy. Lacking here is an exact description of the patient's present condition; moreover, the evidence that her brother and sister, both deceased, had "weak backs" does not definitely confirm the diagnosis of the familial type of pseudohypertrophic muscular dystrophy.

If the diagnosis is correct, and particularly if the condition has appeared in previous generations of the family, one has seriously to consider the possibility of transmitting this disease to another generation. Whether this would take place in an individual case is not an easy question to decide. The disease is inherited in about 50 per cent of the children, the sexes being approximately equally affected. This is based on studies of cases in which the disease appeared in successive generations and had the characteristics of a mendelian domination. On the other hand, if the disease has not occurred in previous generations it may be looked on as a recessive factor and the chances of inheritance are much less. There are sporadic cases, usually occurring in the male, and these appear in a frequency of about three to one. It is impossible, therefore, to give any prognosis with regard to the baby in the case presented. There is no indication, as far as the mother is concerned, that the pregnancy should be interrupted on account of her disease. Advice with regard to the continuance of the pregnancy based on the possibility of inheritance cannot naturally be given to the patient in a categorical manner. All one can do is to place the known facts before the patient. In the case presented here there are so many unknown, or at least uncertain, factors that definite advice cannot justifiably be given.

References:

Barnes, Stanley: *Brain.* **55**: 1 (March) 1932.
Diehl, F.; Hansen, K., and von Ubisch, G.: *Deutsche Ztschr. f. Nervenh.* **99**: 54, 1927.
Hansen, K., and von Ubisch, G., *ibid.* **105**: 276, 1928.
Weitz, W., *ibid.* **73**: 143, 1921; **102**: 209, 1928; **107**: 316, 1929.

SERUM ALBUMIN AND TOXEMIA OF PREGNANCY

To the Editor:—I am on duty in the Southern Pacific area and naturally find it impossible to try the efficacy of the following idea: While reading a belated article and editorial on the use of human serum albumin in counteracting the plasmapheresis of shock, it occurred to me that similar treatment might hasten the alleviation of the preeclamptic state. Of course, plasmapheresis does not manifest itself in preeclampsia, for we are dealing with albuminuria primarily as far as the loss of albumin is concerned. I should appreciate knowing whether or not such experimental treatments have as yet been attempted in obstetric clinics. If not, what do you think of my idea and the possibility of administering human serum albumin in an effort to raise the osmotic pressure in the blood with the possible resultant relief of the concomitant rise in blood pressure and the excessive gain in weight?

Captain, M. C., A. U. S.

ANSWER.—There have been no reports in the literature on the administration of human albumin to patients with preeclampsia and eclampsia. Serum albumin concentration is usually depressed in toxemia of pregnancy and, although this depression tends to enhance edema formation, the basic cause for fluid retention is considered to be primarily renal or possibly endocrine in origin. Its correction is therefore of secondary concern only in the management of the fluid retention and of the hypertension.

Blood volume is increased in pregnancy and there is a distinct tendency to pulmonary edema in preeclampsia and eclampsia. Human serum albumin is supplied as a 25 per cent solution which has about five times the osmotic attraction of plasma. Its administration would increase further the plasma volume with the resultant danger of precipitating an acute pulmonary edema. The administration of plasma or of whole blood has been advocated for the control of the peripheral circulatory failure (shock) to which these patients frequently succumb, but these must be administered slowly over the course of several hours in order to prevent pulmonary congestion.

References:

Eastman, N. J.: The Serum Proteins in the Toxemias of Pregnancy, *Am. J. Obst. & Gynec.* **19**: 343 (March) 1930.
Dieckmann, W. J., and Wegner, C. R.: Studies of the Blood in Normal Pregnancy: III. Percentages and Grams per Kilogram of Serum Protein and Fibrin Variations in Total Amount of Each, *Arch. Int. Med.* **53**: 353 (March) 1934.
Dexter, Lewis, and Weiss, Soma: Preeclamptic and Eclamptic Toxemia of Pregnancy, Boston, Little, Brown & Co., 1941.

LECITHIN AND ITS USE IN FOODS

To the Editor:—One hears now a good deal about lecithin as an ingredient of artificially prepared foods. Please tell me what is meant by lecithin in such cases. What are its sources and how is such lecithin prepared?

M.D., Maryland.

ANSWER.—Lecithins are the phosphatides or esters of fatty acids and glycerophosphoric acids which contain choline. They are compound molecules consisting of one molecule of glycerin, two molecules of fatty acids, one molecule of phosphoric acid and one molecule of choline, linked together by loss of an H or OH ion. Formerly lecithin was prepared from egg yolk. Lecithins are present in many plants and especially in cereals

and legumes. Most commercial lecithin is now prepared from soy beans and is often sold as a lecithin hydrate, which has the advantage of being water soluble. It is usually obtained by a modified alcohol extraction (see Horvath, A. A.: *J. Chem. Education* **14**:424, 1937 for details). Because of its emulsifying properties lecithin has many food uses. Recently one of its constituents, choline, has assumed increased dietary importance because it has been found similar to vitamins in physiologic significance. Lecithin is used in candy, margarine, shortening, food fats and oils, biscuits, crackers and other food commodities. It is added to cocoa butter used in chocolate in amounts up to 0.4 per cent.

Lecithin hydrate is manufactured by Jungmann & Co., Inc., New York, from whom details as to its use in food products can possibly be obtained.

FLUORESCENT LAMP NOT RESPONSIBLE FOR ASTHMA IN WATCHMAKER

To the Editor:—A man aged 50, a watchmaker for the past thirty years with a history of prolonged jaundice of unknown etiology at the age of 12, complains of fatigue, sneezing, nasal discharge and some bronchial congestion. These symptoms are of recent date and he associates them from the time he has been working under a fluorescent lamp (mercury?). He claims that when the lamp is removed the symptoms gradually disappear in several weeks and manifest themselves again when he resumes his work under the fluorescent lamp. He is well developed for a man of his age and routinely takes calisthenics, hikes and swims. At his work he uses naphtha, carbon tetrachloride and alcohol at various intervals for cleansing purposes, making sure of good ventilation. He gives no history of any past asthmatic or allergic manifestations. He refuses any studies because he has been symptom free since avoiding the use of the lamp. Are there any reports as to fluorescent rays causing these symptoms? Can the chemicals which he has used for a period of years without any difficulty now be responsible for these symptoms?

M.D., Pennsylvania.

ANSWER.—The sneezing, nasal discharge and bronchial congestion are almost certainly not due to the fluorescent lamp. They may, however, be caused by naphtha or carbon tetrachloride and perhaps by alcohol, as inhalation of these vapors is not infrequently responsible for similar symptoms. Chemicals may begin to cause symptoms after a prolonged period of exposure.

A letter of inquiry to the Lighting Research Laboratory of the General Electric Company confirms the statement that exposure to the fluorescent lamps cannot cause these symptoms. Matthew Luckiesh, the director of this department, writes as follows:

"The radiant energy emitted by the fluorescent lamp is entirely within the spectral range of natural sunlight or natural skylight. The fact that it is a low pressure mercury arc is of no consequence as far as the radiant energy is concerned. The phosphors with which the inner surface of the glass tube is coated transform the short wave ultraviolet energy into visible energy or light. These are opaque to ultraviolet energy not found in sunlight, and in addition we design the spectral transmission of the glass so that no measurable amount of energy shorter than the short wave end of the spectrum is transmitted.

"So much for the light from the fluorescent lamp. Of course, the light can be misused; that is, the lighting may be bad. There may be glare direct from the light source or specularly reflected from the work. However, I know of no reason why glare should produce the results complained of. I am certain that the effects which the patient experiences have nothing to do with the light from the fluorescent lamp. He should experience the same effects outdoors in the sunlight if light is the cause. I have traced down a variety of complaints and none of them are traceable to the light and radiant energy from the fluorescent lamp."

OCCLUSION OF RETINAL ARTERY IN PREGNANCY

To the Editor:—A patient had an occlusion of the central retinal artery of the left eye which resulted in almost total blindness of that eye. This occlusion occurred when the patient was three to four months pregnant. Except for the eye, the physical examination is negative. Should the patient have more children? Would occlusion be likely to occur in the other eye if she should again become pregnant? What was the relation, if any, between the retinal vessel occlusion and the pregnancy?

Henry W. Ten Pas, M.D., Holland, Mich.

ANSWER.—It is exceedingly unusual to have thrombosis of the central artery occur during uncomplicated pregnancy. If there was an acute rise of blood pressure during the pregnancy, such an event may have been due to or precipitated by arterial spasm. If there was no rise of blood pressure, however, there would be some doubt whether the closure of the central artery had any relation to the pregnancy. In view of this doubt it would probably not be necessary to prevent further pregnancies, since the likelihood of such an event occurring during the subsequent pregnancy would be exceedingly slight.

CALCIUM DEFICIENT DIET AS AID IN CORRECTING BONE DEFORMITIES

To the Editor:—Can you discuss the reduction of deformity of the long bones by a diet poor in calcium and rich in phosphorus and the application of casts to the straightened bone as soon as the absorption of calcium has been sufficient?

J. W. Hopkins, M.D., Glendale, Calif.

ANSWER.—In an article published in the *Archives of Surgery* (**28**:742 [April] 1934) Ghormley and Stuck described an experiment in which Ghormley had been assisted by Aub and Bauer of Boston. This consisted in the feeding of a low calcium diet with the development of a definite negative calcium balance for a patient in whom correction was being attempted for a severe scoliosis. It was the opinion of the authors that this aided in obtaining correction and that the bones at the time of operation were found to be much softer than normal. Furthermore, it was their opinion that calcification and new bone formed more rapidly in this patient after operation when the patient was again placed on an adequate diet than had been seen in patients who had not gone through an initial period of decalcifying of bone through diet. Several other surgeons have attempted to make bones sufficiently soft to be able to reshape them by feeding a diet poor in calcium and rich in phosphorus or through the administration of ammonium chloride.

As an addition to this program, Nachlas of Baltimore found that, if a plaster cast was applied to the extremity in which there was a deformity which the surgeon wished subsequently to correct while the patient was being given a diet insufficient in calcium, the bones in that extremity atrophied more rapidly than did those of the rest of the body because of the immobilization. Nachlas expressed the opinion that in certain cases it was possible to correct these deformities, which otherwise probably would not have been correctable without open surgery. This work was not published but was discussed before several groups of physicians.

The methods referred to, however, have not been accepted as practicable by a vast majority of orthopedic surgeons. As far as the literature would indicate, and from discussion with orthopedic surgeons, it seems probable that the method will never be used widely.

MICROSEDIMENTATION TESTS OF BLOOD

To the Editor:—How do the Landau-Adams microsedimentation apparatus and the Brandenburg microsedimentation apparatus compare in accuracy with the macromethods such as the Westergren and the Wintrobe-Landsberg? I shall appreciate any information on this subject that you can give me.

Wesley R. Heard, M.D., Pasadena, Calif.

ANSWER.—The Landau-Adams and the Brandenburg microsedimentation tests represent the modification of the Linzenmeier-Raunert method described by Landau (*Am. J. Dis. Child.* **65**:691 [April] 1933). Landau's extensive studies with the method demonstrated its reliability and its simplicity, particularly after the introduction of the check syringe as a means of mechanical aspiration. The chief criticism of this method is that the column of citrated blood sediments within a capillary pipet whose inside bore is 1 mm. In this respect this method shares the inadequacy of other types of sedimentation apparatus in which a capillary pipet is employed. Wintrobe and Landsberg (*Am. J. M. Sc.* **189**:102 [Jan.] 1935) and Ham (*Medicine* **17**:447 [Dec.] 1938) have pointed out that the settling of the red cells in tubes with an internal diameter of 2 mm. or less may be slow and uneven. Since the Westergren and the Wintrobe-Landsberg macromethods employ tubes with internal diameters of 2.5 mm., greater accuracy is assured. The ideal micro method, from the standpoint of accuracy, is one which utilizes capillary blood but which employs a sedimentation tube with the basic specifications of a standard venipuncture method. Such methods have been described by Cutler (*Am. J. M. Sc.* **173**:687 [May] 1927) and by Smith (*ibid.* **192**:73 [July] 1936).

PREPUTIAL ULCER FROM AMMONIACAL DERMATITIS

To the Editor:—I have just come on the note on "Stenosed Urethral Meatus in Young Boy" (The Journal, June 5, 1943, p. 409). To me the crusting about the glans penis and terminal urethra sounds much like a preputial ulcer from an ammoniacal dermatitis. It would be important to know if the child still has enuresis and if there is a strong ammoniacal odor about the child on awakening. If this is so all one has to do is rinse the clothing in a final rinse of 1:5,000 to 10,000 mercury bichloride after washing and this will have a bacteriostatic effect on the urease splitting organisms, which form ammonia (NH_3) from the urea in the urine. This, of course, is a common finding in pediatrics and responds beautifully to this method of therapy. Locally nothing really needs to be done, because as soon as ammonia ceases to be formed the ulceration heals.

Henry F. Saunders, M.D., Cleveland.